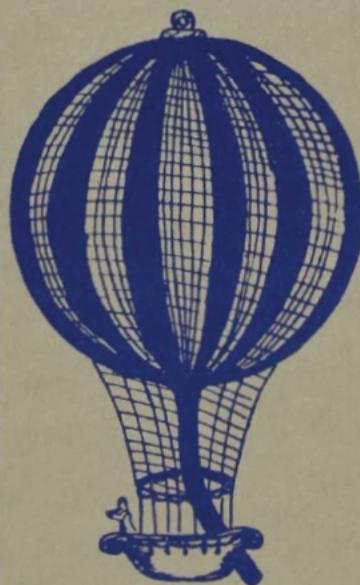


THE AIR ARM OF THE CONFEDERACY

...Joseph Jenkins Cornish III...

SIC ITUR AD ASTRA

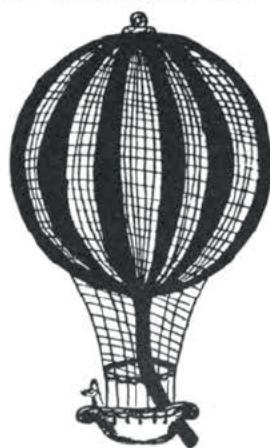


A History Of Origins and Usages Of
WAR BALLOONS By The SOUTHERN ARMIES
During The AMERICAN CIVIL WAR

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A CONFEDERATE BALLOON LOFTED OVER RICHMOND - 26 JUNE 1862

This sketch was made by the Union newspaper artist, Waud, from a point slightly west of Fair Oak Station. Assuming the accuracy of the placement of the balloon and landmarks and Waud's statement that it was about four miles east of him, the ascension was taking place at

Battery #3 on Williamsburg Road

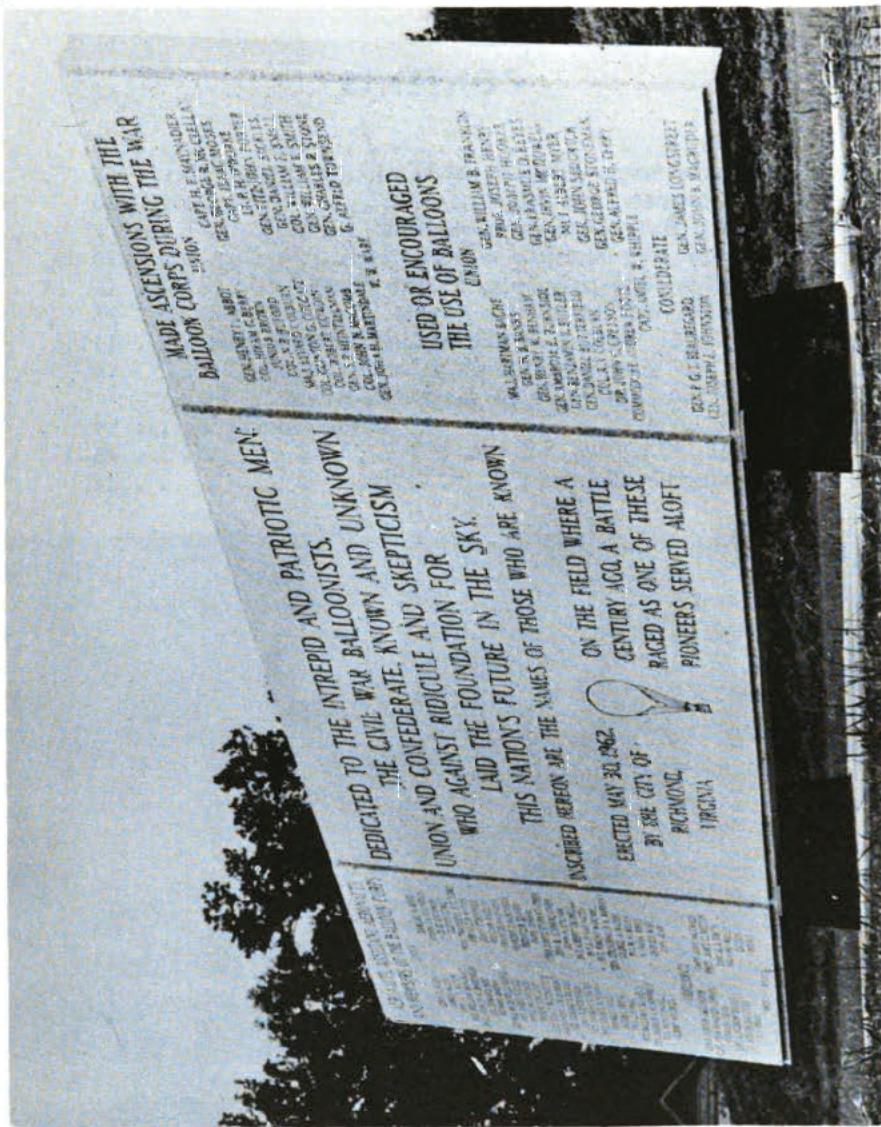
BALLOON CORPS MEMORIAL

Richard E. Byrd Flying Field
City of Richmond's municipal
airport was the site of
three important battles of
The American Civil War,
one of which was
The Battle of Seven Pines
during which balloons were
used on a field later to be
a harbor for modern aircraft

It also is almost in the exact middle of the points where Confederate balloons ascended in the Richmond area.

At the right is a memorial
erected by the City of
Richmond
on 30 May 1962
in honor of those men

BRIEF OF
MILITARY AVIATION
IN AMERICA



MADE AND SOLD
BY THE STANDARD
BALLOON CORPS, DURING
THE WAR OF 1812.

PREFACE

There has been no war like the American war between the states of 1861 - 1865.

Fort Sumter fell 46 years after Waterloo, but in that brief period, scientists, chemists, engineers and adventurers had introduced innovations unheard of by Napoleon.

That war made constant use of such: the telegraph to quickly communicate with distant armies; railroads to transport troops and materials long distances and quickly; steamboats to convey them up stream and against tides; ironclad ships to render useless the wooden navies of the world; and to create one entirely new arm - or may we say pinion - to the art of war.

With the exception of the balloon, the forerunner of modern aviation, most of these innovations were produced after Waterloo; but strangely, the balloon was fairly well known in France many years before Napoleon's era, though not seriously recognized or adopted by the armed forces.

It remained for this war, far from the laboratories and factories of Europe, to carry warfare above the earth's surface. Due perhaps to better and more publicity, we have been led to believe the Federal forces took priority in aviation and the Confederate Air Force consisted of one and only one balloon, made of ladies' silk dresses.

We are indebted to the scholar Dr. Joseph J. Cornish III, Head of the Aerophysics Department of Mississippi State University, for permitting the Richmond Civil War Centennial Committee to present this brochure, his production, as a contribution to the Centennial.

Dr. Cornish, in a factual manner, tells how the Confederacy, devoid of technical facilities, was not lagging in aeronautical efforts.

Dr. Cornish did much of the research necessary to compile the names of the members of the Balloon Corps, Confederate and Federal, which appear on the tablet unveiled in 1962 at the Richmond municipal airport.

In a pleasing way he mentions people and places in Richmond remembered by many of us and we are proud to have his article appear as our official publication.

J. AMBLER JOHNSTON
Chairman,
Richmond Civil War
Centennial Committee
21 January 1963

AUTHOR'S ACKNOWLEDGEMENTS

The author gratefully acknowledges the assistance of his mother, Mrs. J. J. Cornish; his wife, Grace; and her mother, Mrs. E. F. Pollard; in gathering and compiling much of the material presented here. The members of the staffs of the Natchez (Miss.) Public Library, the Mitchell Memorial Library of Mississippi State University, and the New Orleans Public Library were particularly helpful in tracking down various references.

Robert W Waitt jr., Executive Secretary of the Richmond Civil War Centennial Committee, was a constant source of encouragement and in addition furnished many of the photographs and documents which are included in this study. For Mr. Waitt's valuable cooperation and help in this regard as well as for his constant check of historical accuracy, the author is especially appreciative.

To the author's secretary, Mrs. Wren Bridges, and to the staff of the Richmond Civil War Centennial Committee, the author offers his profound thanks.

Joseph Jenkins Cornish III
Mississippi State University
State College, Mississippi
30 October 1962

CHAPTER I

THE BIRTH OF THE WAR BALLOON

"...of what use is a new born baby?"
B. FRANKLIN 1783

In 1783 the newly united states of America, having finally gained their independence, disbanded their armies. George Washington resigned as Commander-in-Chief, retired to Mount Vernon, and the states began to establish their position as a world power. During the same year, a remarkable device was demonstrated in France which was to play an important part in the destiny of these now United States of America.

* This device was the product of the efforts of two brothers, Joseph Michel and Jacques Etienne Montgolfier. The "Brothers Montgolfier", as they came to be called, had worked for ten years to construct some sort of vehicle which would enable them to travel through the air. They had tried steam, in imitation of the clouds, and also the newly discovered gas, hydrogen, but had found that both of these vapors escaped readily through the relatively porous paper which they used for envelopes. But Joseph, while on vacation in the summer of 1782, discovered that ordinary air would not escape through paper and, if heated enough, could lift the paper bags or "balloons". Elated at his discovery he wrote to his brother, Jacques:

Prepare a supply of taffeta and cordage, and you shall
see the most astonishing thing in the world.¹

The brothers soon had built a number of large fabric balloons lined with paper and had started a sequence of demonstrations which eventually attracted the attention and admiration of the world. The first public exhibition of these balloons was on 5 June 1783, when they launched a large unoccupied balloon before a huge throng at Annonay, France. This flight was followed by the famous ascension, from Versailles on 19 September, of a duck, a cock and a sheep. The first manned flight took place on 15 October 1783, when Jean Pilatre de Rozier ascended in a tethered balloon and later on 21 November de Rozier and the Marquis d'Arlandes made a free flight in a "Montgolfier".²

Even before the second free flight was made, however, the significance of de Rozier's first flight was recognized by many of the luminaries of France and by visitors from other nations. Only five days after de Rozier's first tethered flight, Andre Giraud de Vilette wrote a letter to the Journal de Paris wherein he described a later tethered flight which he had made in the same balloon from the Rue de Montreuil in Paris. With this letter he became the first man to outline the possible usefulness of the balloon in warfare:

I observed St. Cloud, Issy, Ivry, Charenton and Choisy with ease, and perhaps Corbeil, which a light mist prevented me from distinguishing clearly; from this moment I was convinced that this apparatus, costing but little, could be made very useful to an Army for discovering the positions of its enemy, his movements, his advances, and his dispositions, and that this information could be conveyed to the troops operating the machine. I believe that

it is equally possible, with proper precautions, to make similar use of this apparatus at sea. There, Gentlemen, is an undeniable utility that time will perfect for us.³

With this account deVilette accurately foretold the future of the war balloon.

* Among the visitors to France during this time was a commissioner of the United States, Benjamin Franklin. Already a recognized inventor and scientist in his own right, Franklin was also aware of the potential of the balloon. On 16 January 1784, we wrote that the balloon:

...appears, as you observe, to be a discovery of great importance. Convincing sovereigns of the folly of wars may perhaps be one effect of it, since it will be impossible for the most potent of them to guard his dominions. Five thousand balloons, capable of raising two men each, could not cost more than five ships of the line, and where is there a prince who could afford to cover his country with troops for its defense as that ten thousand men descending from the clouds might not in many places do an infinite amount of damage before a force could be brought together to repel them?⁴

The balloon did not have to wait long for its baptism of fire. Soon afterwards, France was engulfed in a war of rebellion against Louis XVI. By 1794, the great revolution was almost over and during this year the French Republic became the first government in the world to officially recognize the impact of airpower. On 2 April 1794, the "1er Compagnie d'Aerostiers" under the command of Captain Coutelle and Lieutenant l'Homond, was created. These airmen were outfitted with uniforms of blue, a color for air corps uniforms which many nations of the world still choose. There were about twenty-five especially trained airmen and officers in this early air corps and with their balloon, Entreprenant, they made the first wartime aerial reconnaissance at the battle of Mau-beuge. It was during this battle that the war balloon was born.

Shortly after this, the French Republic authorized the formation of a second balloon company and later created an institute for aeronautics at Meudon. The Ecole Nationale Aerostatique was equipped to train a class of some sixty aeronauts.

By 1796, France had at least four war balloons in action, Entreprenant, Intrepide, Martial and Hercule. The French Air Corps was at its peak, and when they invaded North Africa, Napoleon's armies were accompanied by the 1st Balloon Company. Although it saw no action, the company did make some ascents at Cairo, Egypt.⁵

At about this time various jealousies and bickerings in the French high command were spelling out the doom of the balloon corps. Widely differing opinions as to the usefulness of balloons were voiced with the result that by 1802 all military ballooning operations in France had ceased, and the balloon corps was disbanded. Even the Ecole Nationale Aerostatique was shut down and military aviation in France lay dormant for the next twenty-five years.

During this period other European countries made serious efforts to utilize the potentials of aerial warfare. In 1807 the city of Copenhagen was blockaded by a fleet of English ships gathered offshore. The Danes, in an attempt to rid themselves of this British blockade, constructed a large balloon which was to be used to drop bombs on the enemy ships.

This Danish balloon was to have been made mobile by means of a self-contained propelling device, but a series of difficulties plagued the attempt and the whole effort was without success. Failing in their early experiments with aerial bombardments, the Danes used balloons again the following year to drop propaganda on their neighbor, Sweden. Leaflets inciting the Swedes to revolt were dropped from balloons, but this venture failed since almost all of the papers were immediately recovered and destroyed by the Swedish police.⁶

By this time, Napoleon's conquering armies had spread throughout Europe and were marching into Russia. Czar Alexander I, trying every means to stop this invasion, secured the services of a German aeronaut to build a military balloon. He chose Leppig, an engineer from Stuttgart, who constructed a tremendous, fish-shaped dirigible balloon which was to be driven by movable fins. The balloon was actually inflated, a task which required five days, but was never flown because of various mechanical difficulties. And except for some balloons used at the battle of Moscow, the Russian attempts at aerial warfare died. Strangely, the French made no use of balloons in this campaign but later, in 1830, some French balloons saw limited action in North Africa during the fighting in Algeria.⁷

Austria was the next country to use balloons in battle and her efforts were the most elaborate and thorough of any yet attempted. In 1849, during the siege of Venice, the Austrians made use of two balloon-torpedo batteries. Both of these batteries were equipped with a train of five wagons carrying balloons, aerial torpedoes, and other auxiliary equipment. Each wagon train consisted of: one wagon carrying 100 balloons, each about eighteen feet in diameter, made of strong paper; two wagons with about 50 braziers to generate hot air; one wagon with 60 aerial torpedoes, each weighing more than 30 pounds; and one wagon with 40 more aerial torpedoes and a wind-screen to facilitate the inflation of the balloons. The Austrians had developed an effective technique for accurately dropping their aerial torpedoes. After locating themselves upwind of the target, they released small pilot-balloons and plotted their speed and course on a map, then, by trigonometric calculations, the time required for the balloons to reach the target was determined. Next, the large balloons carrying the torpedoes were released. Each torpedo was equipped with a time fuse set to release it at the precise instant to allow the bomb to fall on the target.

In this manner the city of Venice was subjected to continued bombardment. The accuracy of the bombing was excellent, one bomb falling in the market place of the city. The overall effect of this aerial attack was relatively insignificant. The destruction wrought by the bombs was negligible and, in fact, the morale of the Venetians was strengthened. All in all, the aerial attack was later judged a failure. This Austrian attempt at aerial warfare was practically the last such effort in Europe for more than ten years.

The few other endeavors before 1860 were either complete failures or were of little significance. Although France, Denmark, Russia and Austria were the only European nations to actually construct war balloons during this period, there were many speculations from other countries about the potential of the balloon in battle. As early as 1803, Major John Moneys of England suggested that if war balloons had been available during the American War for Independence, the rebellion of the American colonies

could have been surpassed by the British. Money also bitterly stated that if the war-balloon was ever to be of use to an army, the old generals should not be consulted because their reply was sure to be:

...that as we have done hitherto without them very well,
then we may still do without them.⁸

Money's cynical comments concerning the use of balloons by the military proved to be correct in England and, unfortunately, this same attitude generally prevailed in the armies of the North and the South during the American Civil War.

CHAPTER II

PRE-WAR INTEREST IN BALLOONING

* "Sic Itur Ad Astra"

J. P. BLANCHARD 1793

Almost immediately after the Montgolfiers had demonstrated that ballooning was not only possible but also practical, all of Europe broke out in a rash of balloons and balloonists. Each was eager to join in the race to enter the Heavens, and this spectacular new sensation was not long in spreading to the New World. Benjamin Franklin, of course, brought home glowing accounts of the balloons he had seen flown by the Montgolfiers and others in France. There were also, as might be expected, the usual number of false claims and hoaxes as overanxious aeronauts strove to gain fame by being the first to fly in America. Probably the most widely publicized of these rumors, which has been often quoted in many records, is the alleged flight of one James Wilcox, a carpenter from Philadelphia.⁹

On 28 December 1783, only thirty-eight days after the first free flight of the Montgolfiers' balloon, Wilcox was supposed to have made a flight from Philadelphia in a contrivance constructed under the supervision and direction of a Mr. Rittenhouse and a Mr. Hopkins of Hopkinson, both members of the Philosophical Society of Philadelphia. It has been said that before the actual manned flight, a number of tests were made with animals and one tethered ascension carrying a man. Wilcox's flight was reportedly made in a device consisting of forty-seven small balloons each filled with hydrogen. While in flight, Wilcox approached the Schuylkill River and, in order to descend, punctured several of the balloons. In the descent he is said to have broken his wrist.¹⁰ However, subsequent investigations in the archives of the Historical Society of Pennsylvania discredit the alleged event and maintain it to be without foundation. The rumor is thought to have originated abroad.¹¹

There were some serious attempts to improve the art of ballooning even during this early period. For example, the first authenticated balloon to be seen in America was exhibited by a Dr. Foulke from France on the occasion of a lecture on Pneumatics which he delivered at the

* Oddly this motto of Blanchard and other early balloonists is the same as that of the City of Richmond, and dates from about the same period.

University of Pennsylvania in Philadelphia on 17 May 1784.

Dr. Foulke extended a written invitation to George Washington to attend the lecture, but Washington was forced to decline due to the press of urgent affairs of state.¹² The lecture seems to have made some impression upon the public for the first recognized ascension in a balloon in the Western Hemisphere was made during the following month. The balloon, which remained tethered during the ascension, was made by a citizen of Philadelphia, Peter Carnes. It was raised in the city of Baltimore, Maryland, on 23 June 1784, after several previous failures during the same year in Philadelphia. The balloon was a de Rozier model, inflated with hot air, and it carried aloft a young boy.¹³ The name of this lad who was the first to fly in America has apparently been lost.

Besides the successful and numerous unsuccessful attempts at actual flight during this period, there were conducted other more fundamental studies of the properties of various light gases. On 27 March 1786, the Reverend James Madison wrote to Thomas Jefferson concerning some of the research at the College of William and Mary:

We raise here the small balloons filled with inflammable. I have once made a trial of pit coal which I find Cavallo also mentions as affording an air of the same levity as that you wrote me an account of. We raise those filled with rarefied air, tolerably large (about 20 feet in diameter), but I believe no one in America has yet ventured to mount with a balloon.¹⁴

There were subsequent efforts during the following years to make an untethered, free flight in a balloon, but strangely enough, none was successful. Joseph Deeker, a showman from England, made a series of elaborate attempts at flight in New York where he launched several small unmanned balloons but was unable to accomplish a manned ascension. Finally, on 23 September 1789, Deeker, who by public subscription had managed to raise funds for the construction of a large balloon 24 feet in diameter, was ready for his initial ascension. But again disaster loomed:

The day arrives - crowds of spectators fly to the theatre of action - our hero partly inflates his aerial vehicle - the upper retaining line is loosed - and alas, the gas fails! - the balloon falls - the fire communicates and the expectations of thousands ascend in fumo!¹⁵

It remained for Jean Pierre Blanchard of France, "the greatest of the early aeronauts", to make the first free balloon flight in the New World. On the 9th of January, 1793, in Philadelphia, then the capital of the new nation, Blanchard made his forty-fifth free balloon ascension and the first free flight in America. The public participation before and during this flight was probably the most spectacular occurrence seen in the city up to that date. Cannons were fired every few minutes for hours before the flight, brass bands played, and every open place, roof top, steeple, street and road was covered by the immense horde of sightseers. President Washington, Vice-president Adams, Secretary of State Jefferson, as well as innumerable other secretaries, senators, representatives and other important officials of the United States and France were in attendance.

President Washington presented Blanchard with an official passport:

.....to pass in such direction and to descend in such

place as circumstances may render most convenient. The passport further requested all citizens to;

.....receive and aid him with that humanity and good-will, which may render honor to their country.

At ten o'clock in the morning of 9 January, Blanchard, accompanied by a small black dog, ascended from the yard of the jail in Philadelphia and embarked on the first aerial voyage in America. The flight, which was uneventful, lasted for 56 minutes and carried Blanchard 15 miles from Philadelphia to Deptford, New Jersey. He descended in a clearing amidst a thick grove of trees where he met one of the local farmers. Being unable to converse, the pair toasted the event with a bottle of wine which Blanchard supplied, whereupon Blanchard returned to Philadelphia with his equipment in a wagon. On his return he presented to President Washington with a small American flag and a detailed report of the flight which had given him claim to the title, "America's First Aerial Voyager".¹⁶ It would be almost thirty-eight years before a United States citizen would make a free balloon flight in America.¹⁷

In the interim, enthusiasm for ballooning spread throughout the land. Showmen were quick to realize the drawing power of balloons even when unoccupied. Consequently, unmanned balloon ascensions were often combined with elaborate fireworks displays. In New Orleans, a typical spectacle was advertised on 7 June 1805:

NOTICE

On Sunday, the 16th of June in the enclosure of Mr. Bernard Marigny, behind his saw mill, the public will be amused with fireworks presented by M. Reynault, together with the ascension of a balloon 28 feet in height. ... M. Reynault has spared neither care nor expense in his desire to give satisfaction.¹⁸

Since the balloons of this period were often filled with "inflammable air", i.e., hydrogen, the occurrence of a really spectacular sort of "fireworks" was more than a possibility. In fact, Madame Blanchard, wife of the famous aeronaut and a balloonist in her own right, met her death in France on the 7th of July, 1819, when her balloon was ignited by the fireworks which she was displaying.¹⁹

Strangely enough, the launching of the unmanned balloons in connection with spectacular fireworks demonstrations seemed to command the attention of American aeronauts for more than thirty years after Blanchard's flight in Philadelphia and few, if any, noteworthy ascensions took place until 9 September 1830. On this date Charles Ferson Durant became the first American to fly in his own country. Durant ascended in his balloon Castle Garden from the New York city of that name. The balloon, which contained 10,000 cubic feet of hydrogen, stayed aloft for about two hours and carried Durant to South Amboy, New Jersey. In the years to follow, Durant made several other flights in New York and Massachusetts and two from Baltimore, Maryland.²⁰

Durant's flights seemed to open the skies for a flood of American aeronauts in both the Northern and Southern states. In the North, John Wise, Thaddeus S. C. Lowe, Samuel A. King, John LaMountain, John Allen and John H. Steiner, all of whom were later to see service with the Union balloon corps, made numerous and significant flights. Most of these men and many of their deeds have been well documented, however, the flights

and flyers of the South have been less well publicized.]

CHAPTER III

PRE-WAR BALLOONING IN THE SOUTH

"...the Balloon is an excellent place for watching a battle"

S. S. SMITH 1859

On the 13th of April in the year 1844, the nation was astonished and overjoyed to read in the pages of the New York Sun that at last an aerial crossing of the Atlantic Ocean had been accomplished. The story, dispatched from Norfolk, Virginia, to New York went on to tell how a Monck Mason and eight other aeronauts had left North Wales and had, 75 hours later, landed at Charleston, South Carolina, near Fort Moultrie. Their airship Victoria was equipped with a steerable rudder and also had a spring driven propeller to move it through the air. Unfortunately, this story was a complete fabrication which never really happened at all. It would scarcely be worth mentioning except for the fame its author was later to attain. His name was Edgar Allan Poe.²¹

Poe's hoax was perpetrated at a time when the public mind was receptive to almost any fantastic feat involving balloons. Showmen, exhibitors and touring acrobats constantly kept the balloon before the public with various spectacular demonstrations. There were those, however, to whom the balloon and the concept of flight was a real and fruitful challenge.

Among these was the noted French aeronaut, Monsieur Petin, who had come to this country to continue his aeronautical research which had been started at the French Academy of Science. After landing by ship in New York, he moved a part of his equipment and one of his balloons to New Orleans where he scheduled his first demonstration flight to take place at Lafayette Square on the 19th of December, 1852.²² However, due to a police order, the flight was delayed until Christmas Day.²³ At that time the balloon was launched at three o'clock in the afternoon with Petin and three other men aboard. It was a majestic vehicle containing 95,000 cubic feet,²⁴ and the ascension was witnessed by a horde of holiday celebrants. In a little more than an hour, the balloon had drifted out over Lake Ponchartrain where disaster struck. The gas, which had been slowly leaking from the bag, began to escape rapidly and the whole balloon collapsed into the lake. The basket, or cab, overturned, pitching Petin and his three companions into the icy waters. Fortunately, all of the men were rescued by the steamer Alabama, which happened to be in the vicinity.²⁵

This dunking did not dampen Petin's spirit for he immediately began making plans to bring his other balloon from New York. As was the custom of the times, he started a public subscription for the purpose of raising the necessary funds. During this campaign he delivered a well received lecture about the science of airships and ballooning to the Louisiana College on Dauphin Street in New Orleans.²⁶ By April of 1853, Petin had achieved considerable recognition by the local press. In particular, the New Orleans German language newspaper Deutsche Zeitung had named him "Man of the Century" for his scientific contribution to

the realm of flight.²⁷ Shortly after this, Petin was able to have his other balloon shipped to New Orleans from New York. But the fickle public was more interested in entertainment than in serious scientific endeavors. The crowds interfered more and more with the research and, finally, when his remaining balloon was damaged by an intruder into his workshop, the discouraged Petin decided to leave the city and return to France. His departure was widely protested by the newspapers but Petin could not be detained.

If the public did not like Petin, they were to welcome with eager arms his aeronautical successor in the person of Alexander Morat. Morat, who had made more than sixty ascensions before coming to New Orleans, made his second flight in New Orleans from the Place d'Armes, or Congo Square, on 31 December 1856.²⁸ Due to the beautiful weather, there was a "numberless crowd" of spectators who watched Morat and his guests, H. Paine, agent for the New Orleans hotels and John J. Lane, of the New Orleans Bee take off on a flight which carried them four miles away from the city to a landing at the plantation of Commodore Ribaud.

Morat had just the exhibitionism for which the public clamored. On his next ascension, just two weeks later, he provided them an additional spectacle; before the ascent, there was a footrace between a Mohawk and an Iroquois Indian chief.²⁹ This flight was also to provide Morat with some thrills for he was carried thirty-five miles away from the city, deep into the swamps of Lafourche Parish. He was helped back to New Orleans the next day by hunters and fishermen along Bayou Cuba after having spent the night among the mosquitoes.³⁰

In Europe, and particularly in France, it had become the vogue to make balloon ascensions while seated on horseback and Morat was not to be outdone by such antics for on 8 February 1858:

Monsieur Morat's balloon with a team of young alligators astride of which were Messrs. Morat and S. S. Smith, went up from Congo Square and after passing over a portion of the city, descended unharmed in a flower-garden at the corner of Camp and Felicity Streets. The alligators, it is supposed, were never so high before; but Messrs. Morat and Smith have been high often.³¹

Another popular sport of the times was betting on "balloon races". In this game, two or more balloons competed to see which could cover the greatest distance.] An instance of such a contest, in which Morat engaged, is of interest if only because of the unusual vapor used in one of the balloons. On 15 February 1858, Morat, in his gas-filled balloon, challenged an Englishman, Richard Wells, whose balloon was filled with vaporized alcohol. Both took off from the Place d'Armes and Morat successfully sailed away across the Mississippi River to a safe landing near the Belleville Iron Works in Algiers. But Wells' balloon had considerably more trouble. After reaching an altitude of 800, or 1000 feet, the alcohol vapor began to condense causing the balloon to descend more and more rapidly until it finally came to rest atop a house just behind the Bank of Louisiana. Thousands of spectators rushed to the scene in such disorder that one man was seriously trampled and a Mr. Rawlings, in whose yard the balloon fell, sued the city for \$500.00 damages for the havoc wrought to his porch and flower gardens.³² The upshot of this fracas was that the Board of Aldermen tabled Morat's request to make eight ascen-

sions from New Orleans' Tivoli Circle.³³

Wells was not dismayed by his experience and on the following month made an ascension from Algiers in a hot air balloon. Immediately after the start of the ascent, however, the balloon caught on the eaves of a house, tore open, and fell to earth after Wells had jumped out just in time to avoid injury. A young girl who was to have accompanied him could not be found in time for the ascent and so luckily escaped the accident.³⁴ During the following months there were numerous ascensions in New Orleans by Messrs. Morat, Marble and Smith.³⁵ On one of these flights Morat was barely rescued from the Mississippi River, having landed there after an ascension from the Pavillion Gardens in Algiers.³⁶

These frivolous flights were obviously not undertaken for the purpose of studying or improving the science of ballooning but only to satisfy the popular craving for unusual entertainment. Petin's ignominious expulsion from New Orleans had clearly defined the popular conception of the role of the balloon. But even these vaudevillian attempts served to familiarize both the spectators and the aeronauts with the balloon and, in many ways, did help to further the state of the art of ballooning. For example, on George Washington's birthday in 1859, S. S. Smith, while hovering above Jackson Square, had an opportunity to hear and observe a cannonade fired in honor of the first president. The barrage from the cannons so impressed Smith that he publicly stated his opinion that the balloon surely provided an unexcelled vantage point from which to observe artillery fire. This fact had not escaped the notice of many balloonists and strategists before Smith, but his public announcement at least served to bring this facet of ballooning to the attention of the general public.³⁷

By this time, ballooning had become an accepted pastime throughout the South and, in fact, had become so popular that many of the balloons were "manned" by female aeronauts. For example, on 10 July 1858, Mrs. E. M. Davis in her balloon American Eagle ascended from Nashville, Tennessee, crossed the Cumberland River, and landed in Edgefield,³⁸ Later in Tuscumbia, Alabama:

Professor Wilson and a beautiful young lady made an ascension from the Fairground, Tuscumbia, in a balloon filled with smoke. They came down safely a quarter of a mile from the point of departure. By and by, the ladies will ascend by simply filling their crinolines with smoke - and that is all they lack of being angels.³⁹

Balloon excursions were also a not uncommon occurrence and often trips were made in large balloons carrying several persons. On one such occasion, a balloon with four voyagers took off from St. Louis, Missouri, and landed safely at Henderson (Jefferson County), New York.⁴⁰ More often than not, these balloon trips ended in the midst of some pasture or cotton field. Abraham Lincoln is credited with an account of one such occurrence. Lincoln told of a balloonist who went up from New Orleans and after having traveled for hours dropped to earth in a cotton field. The astounded field hands, seeing a man resplendently dressed in silks, satins, and silver spangles and suspended beneath a multi-colored, trembling globe which belched smoke and fumes, fled helter-skelter for cover. They all ran away except for one wooly-headed patriarch, Uncle Mose, who, either because of paralyzing fear or acute rheumatism, remained

rooted to the spot. Mose waited until the aeronaut had disentangled himself from the folds of his collapsing balloon and slowly, hat in hand, he approached the apparition. Then, at a discrete distance, he mumbled, "Howdy, Massa Jesus, how you left your Paw?"⁴¹]

Many of the Southern newspapers carried glowing accounts of these ballooning activities. The Natchez Daily Courier, in particular, ran a number of articles about the work of the Northern aeronauts, Thaddeus S. C. Lowe and John LaMountain.⁴² Such coverage by the Southern press serves as a good indication of the public interest in civilian sport ballooning. This interest lasted up to the very eve of The War. In April of 1860, two citizens of Savannah, Georgia, made one of the last pre-war balloon flights in the South. Messrs. Cevor and Dalton, ascending in the teeth of a rising gale, were quickly blown out over the Atlantic Ocean beyond the sight of the huge crowd which had gathered to watch them. They were carried for forty miles before finally landing in Calaboga Sound and they remained in the water for more than an hour until George A. Savage, also of Savannah, was able to rescue them. Their balloon was swept away to sea and was never seen again.⁴³

But balloons aplenty had been seen throughout the South, and their potentials and their limitations were at least partially recognized by men who would later call upon them to serve tasks far more important than thrilling a festive holiday throng. Through the efforts of these men, the yet unborn Confederate States of America was to become the fifth nation in the world to wage aerial warfare.]

CHAPTER IV

THE WAR IN THE AIR BEGINS

"... it seems to me the Balloon can be useful"

J. E. JOHNSTON 1861

As early as May 1861, less than a month after the firing on Fort Sumter, Southern aeronauts had offered their services to the Confederate government and within a few weeks their balloons had been sighted by the Yankees in Washington.⁴⁴ Generals P. G. T. Beauregard and Joseph E. Johnston had been placed in command of the Confederate forces along the Potomac. General Beauregard, as commander of the Southern forces in the Charleston area, had accepted the surrender of Fort Sumter from Major Robert Anderson on the 13th of April. Coming to the capital at Richmond, he was then ordered to the village of Manassas, Virginia, to deal with the impending Union invasion in that area. Beauregard arrived at Manassas on 1 June and with him, as his Chief of Ordnance, was Captain E. P. Alexander. Alexander had resigned from the U. S. Army at the West Point Military Academy at the outbreak of hostilities and was a particularly skilled and well trained signal officer. He had recently developed at West Point a technique of long-range communications using a wig-wag flag system to transmit messages in code. It was two weeks after the arrival of Beauregard at Manassas that the first Confederate aerial activity was

reported by the Northern press. [On the 14th of June, a Confederate balloon was seen beyond the Chain Bridge in the direction of the Leesburg Pike.⁴⁵]

At this time the Confederate forces under Beauregard were deploying throughout the Manassas area, and General Joseph E. Johnston, who had been at Harper's Ferry since May, was occupying the area around Winchester, Virginia. Advance posts and cavalry scouts patrolled the town of Fairfax Courthouse and along the Leesburg Pike north of Falls Church. Southern balloonists were also engaged in observations and were again reported in the Northern press on the 18th of June. [It was on this same day that the highly publicized Northern balloonist, Thaddeus S. C. Lowe, made a tethered balloon flight on the grounds of the Smithsonian Institution. During this flight he sent a telegraph message from the balloon to the ground and by this demonstration hoped to convince the Union army to accept his services as an army balloonist.] Extensive research has been unable to uncover either the origins of the Confederate balloon or its aeronaut except that the balloon was obtained by Beauregard from a "private source". The balloon was again sighted and its presence reported on the 22d and 23d of June,⁴⁶ near Beauregard's outpost at Fairfax C.H.

During this period it had become apparent to both the Confederate and Union generals that a conflict of major proportions was inevitable. The center of activity was obviously to be concentrated at Manassas Junction, a small railroad settlement at the point where the Orange & Alexandria Railroad formed a vital link with the Manassas Gap Line. The military significance of this junction had been recognized by General R.E. Lee as early as 6 May when he ordered it to be occupied and fortified.⁴⁷ By the middle of July, the opposing armies had arrayed themselves around Manassas. The Union newspapers, on 5 July 1861, had published their fifth sighting of Confederate balloon activity.⁴⁸

The ensuing First Battle of Manassas (Bull Run) saw the defeat and subsequent rout of the Union forces under General Irvin McDowell. The South failed, however, to capitalize upon its victory and the major portion of the Union army beat a hectic retreat back to Washington. [The opposing armies found themselves occupying virtually the same positions which they had held before the battle.] In the winter months to follow there was a lull in the fighting while the North formed a new army under the then popular Major-General George B. McClellan, and the South saw to its defenses in Northern Virginia.

[Shortly after the battle of Manassas, General Johnston, who had joined Beauregard there, wrote to Beauregard on 22 August about the Confederate balloon, saying:

...it seems to me that the balloon may be useful...Let us send for it; we can surely use it advantageously.⁴⁹]

By this time an elaborate signal system had been established between the Confederate lines and the Southern sympathizers in the Union capital of Washington. Rockets and flares for signaling had been assigned to Beauregard's command and Captain Alexander, calling upon his talents as a signal officer, had set up a heliograph signal arrangement using tin mirrors which carried messages between Munson's Hill, Mason's Hill, and the city of Washington. He also had worked out a secret alphabet for use at night, which was based upon the positions of the window shades on some of the high mansions in the city. Various other signals

and codes using flags, lanterns and window curtains were used to relay messages from behind the Union lines to the Confederate observers. Beauregard's headquarters were connected to these outposts by means of a telegraph.⁵⁰ In connection with this highly successful communication system, Beauregard remembered his balloon and Johnston's advice that "...we can surely use it advantageously", and on 4 September, he ordered it raised over Munson's Hill near Falls Church.⁵¹ Later in the winter of that year, the balloon was again reported flying over Edward's Ferry, near Leesburg, by the Union Brigadier-General W. A. Gorman. This Confederate balloon activity led the Yankee general to request that similar Union equipment, then in operation, be brought to his outpost.⁵²

By this time the Union balloon activities had also become a source of considerable annoyance to the Southern forces and much effort was expended in confusing the Yankee observers and in concealing the Confederate movements from their view.⁵³

As early as 29 August, Captain E. P. Alexander, during the activity around Falls Church, brought his guns to bear on the Union balloonist Thaddeus S. C. Lowe. The Yankee balloon was not hit but Alexander mentioned in a letter to his father that:

...we sent a rifle shell so near old Lowe and his balloon
that he came down as fast as gravity could bring him.⁵³

The Union balloonist John LaMountain had too been a source of annoyance to the Southern forces early in the war in the operations around Fortress Monroe. The story of a contraband who had run away during the fighting there was reported by Northern correspondents:

...if Sambo is to be believed, their rage amounted to a perfect frenzy... Nothing else has occurred which has so much enraged them. Their rage at "de insult" as they called it only found vent in a volley of oaths. For a time, they thought of firing on him with long-range rifles, but finally concluded that "de damn Yankee flew too high for 'em" (I quote the negro's words) and looked up at him with stifled indignation.⁵⁴

In Beauregard's sector more effective means were employed to afford protection from aerial observations. Shortly after Alexander had fired upon Lowe's balloon, Beauregard's adjutant, on 2 September, issued instructions which said that:

The general of this Army Corps wishes every precaution taken to prevent the enemy from discovering by balloons or other means the numbers of our advanced commands or outposts. No lights should be kept at night except where absolutely necessary, and then under such screens as may conceal the lights from observation. Further, tents, if used, ought to be pitched under the cover of woods and sheltered in all cases as far as possible from accurate computation.⁵⁵

Thus, with this order, Beauregard became the first general in history to recognize the value of "blackouts" which became so well known in later wars.⁵⁶

Later, in early December 1861, Beauregard realized that Union observers could be deceived into believing that he was strongly fortified. On this subject he thus wrote to Major-General James Longstreet:

¶ ...as it may become suddenly important to prevent the enemy's balloon observations from discovering whether or not we have guns in our batteries, or more properly to let them believe that we have, you will have at once the position of each gun protected from aerial vision by a shed of leaves and brush wood, elevated six feet from the ground or the height of the crest putting in each embrasure a piece of wood of the proper size (blackened) to represent a gun. Endeavor to have this done as soon as possible.⁵⁶

These crude, imitation cannons came to be known as "Quaker Guns" and were used extensively by the Confederates throughout the campaign.⁵⁷

¶ In addition to this aerial camouflage, Beauregard instructed his troops to build false campfires and picket fires to further confuse the enemy as to the exact number of his command.⁵⁷ This deception did result in many erroneous reports of his actual strength and, in fact, McClellan moved his forces by sea from Washington to Fortress Monroe. From this beachhead McClellan then began his march up the Peninsula toward Richmond. Once again in this campaign the Confederate aeronauts ascended in their balloons to assist the armies of the South.⁵⁸

CHAPTER V

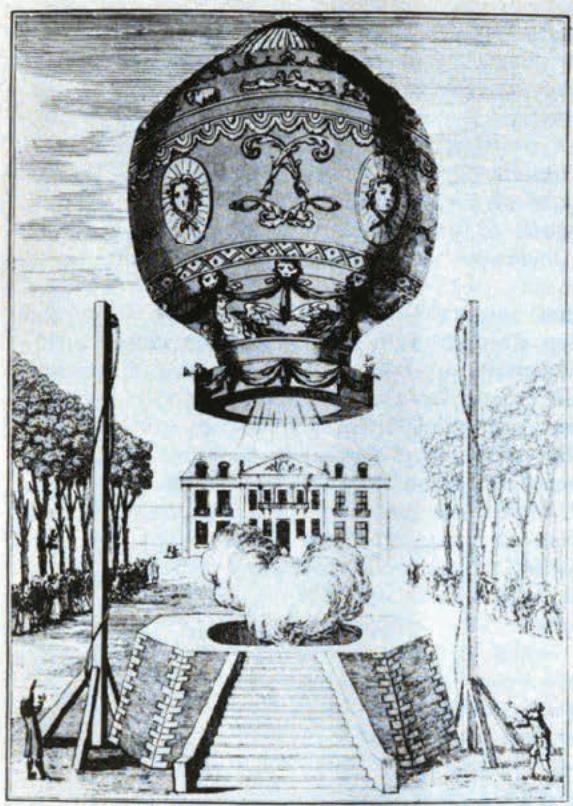
AERIAL WARFARE IN THE PENINSULA CAMPAIGN

"...the soldiers, to a man, had never seen a Balloon"

J. R. BRYAN 1862

Faced with the apparently strongly entrenched forces of Beauregard and Johnston and still smarting from the stinging defeat of First Manassas, the Union Army spent the winter of '61/62 in the Washington area regrouping and replotting its strategy. By the spring of 1862, McClellan decided to move his army by sea to Fortress Monroe and then to march up the peninsula to Richmond. On the 4th of April, 1862, McClellan left Fortress Monroe to begin his attack on Yorktown. The Confederate forces in this area, called the Army of the Peninsula, were under the command of Colonel John B. Magruder who was joined on the 5th of April by General Joseph E. Johnston who had recently left Manassas to help meet this new threat to Richmond, the capital of the Confederacy. Beauregard, in the meanwhile, had been moved to Shiloh, Tennessee, to assist General Albert S. Johnston in coping with Union forces attacking there under the command of Maj.-Gen. U. S. Grant and Brig.-Gen. William T. Sherman.

McClellan intended to push up the peninsula with his flanks protected on both sides by Federal gunboats in the York and James rivers. Upon reaching Yorktown, he found that Magruder's forces had been re-inforced by Johnston and the Army of Northern Virginia and were firmly entrenched from river to river. When Johnston came down from Manassas, by the

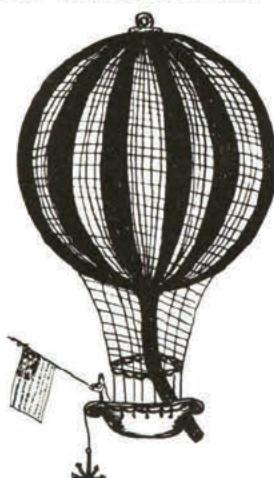


(left)
THE FIRST BALLOON
The "Brothers Montgolfier" loft a balloon for the first time in 1783

(below)
THE FIRST AMERICAN
IN THE AIR
New York to South Amboy in 1830, non-stop, by Charles Durant



SIC ITUR AD ASTRA

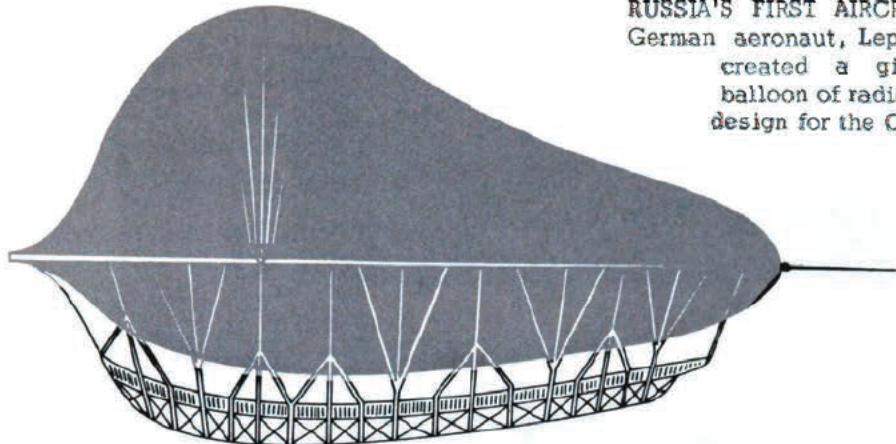


AMERICA'S FIRST BALLOON - J. P. Blanchard displays air potential to President Washington

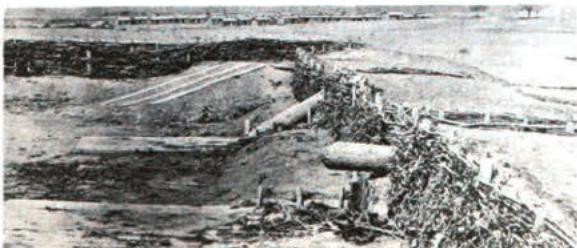


NEW ORLEANS FAVORITE
Alexander Morat makes the South air-minded by his colorful and daring aerial voyages

RUSSIA'S FIRST AIRCRAFT
German aeronaut, Leppig, created a giant balloon of radical design for the Czar



Pierre G. T. Beauregard (left) was an enthusiastic balloon champion who also became the father of many counter-aerial military practices. Joseph E. Johnston (right) firmly believed that air strength was essential in war



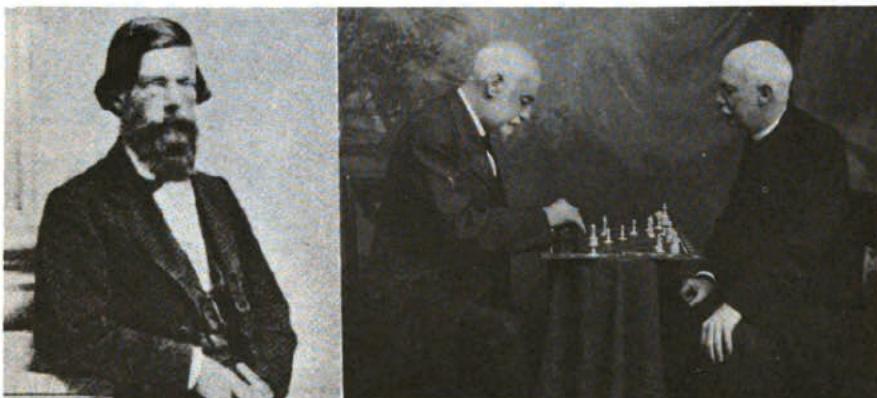
QUAKER GUNS - One type of camouflage developed by General Beauregard to deceive the enemy



FIELD GAS GENERATORS—These gave the North superiority that the South could not match. 3 were taken by the CSA—the only Union air equipment to be captured



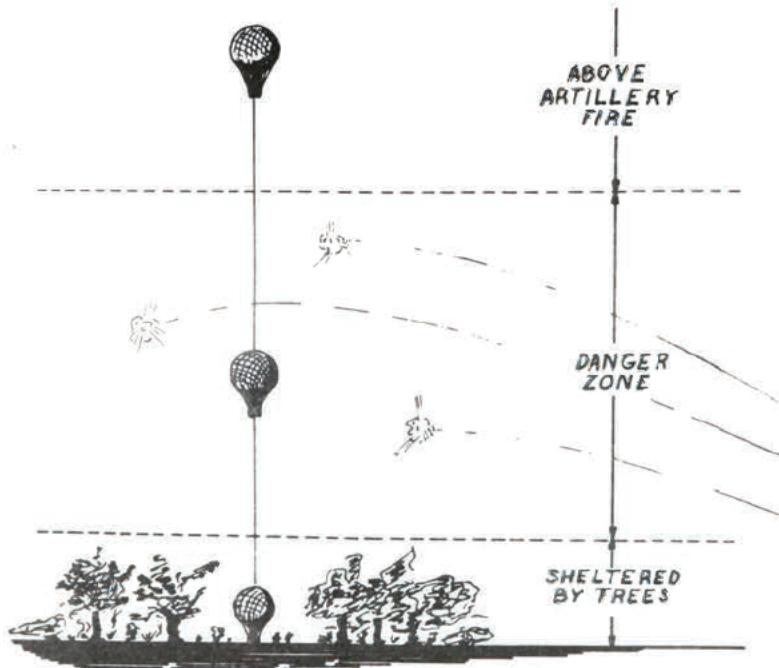
John B. Magruder (left) made good use of balloons in the Yorktown area. E.P. Alexander, as aeronaut and general, felt that the South must have and use balloons. He wrote of their great value, both in defense and offense.



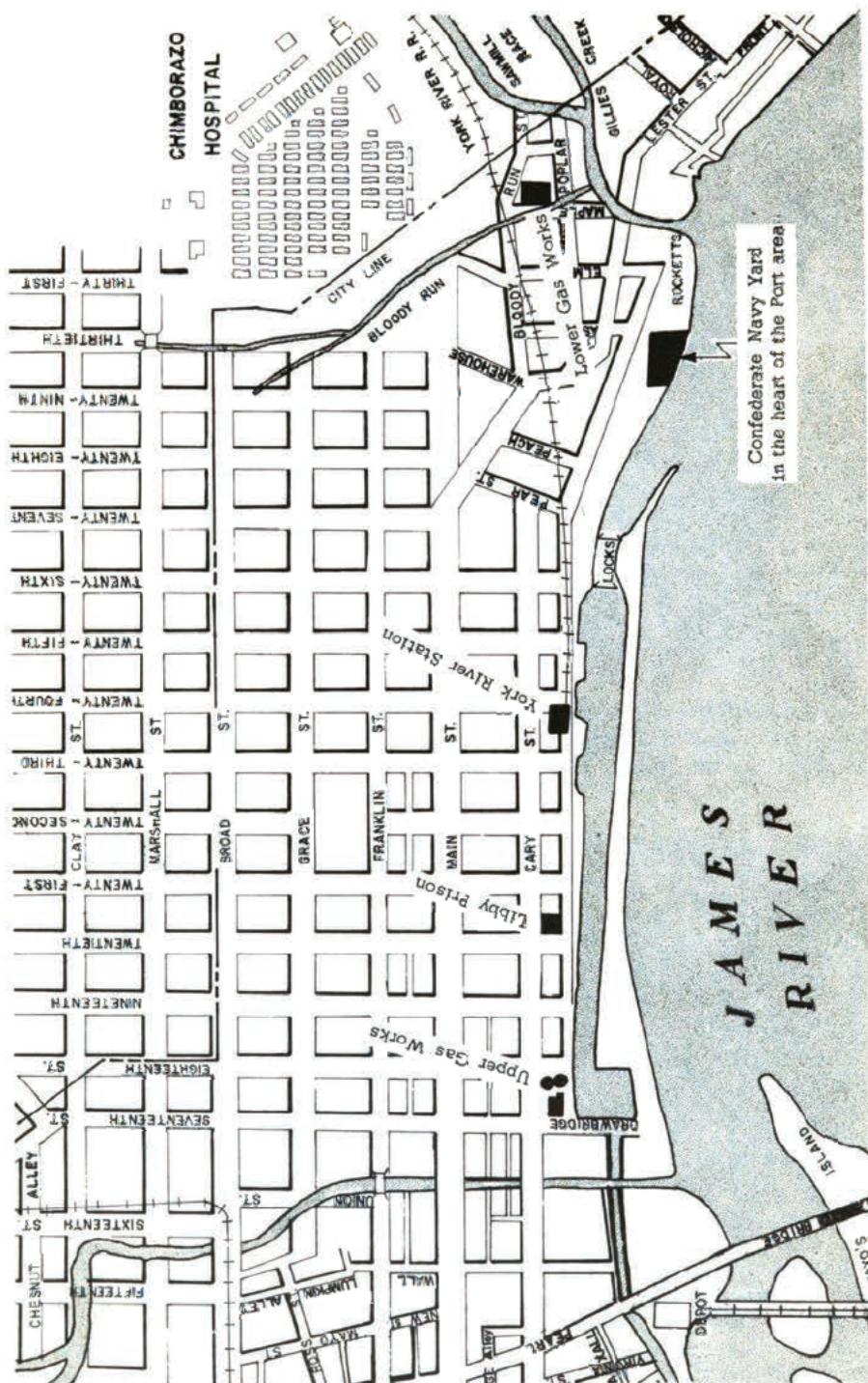
Langdon Cheves (left), South Carolina's statesman and aeronaut built the first silk balloon. John Randolph Bryan (left in picture) is shown in a 20th Century photo playing chess with his brother. He was a resourceful and daring airman for the Confederacy and a keen aerial observer.



THE PENINSULA - Where Bryan Had Useful and Harrowing Experiences



* THE DANGER ZONE - Passing It Was the Dreaded Time for Every Balloonist





JAMES M. LONGSTREET

His facetious remark and later writings caused many to believe that Cheves' silk balloon was made of ladies' dresses

RICHMOND WHARVES
This dock area at Rocketts is probably where the Teaser took on the balloon

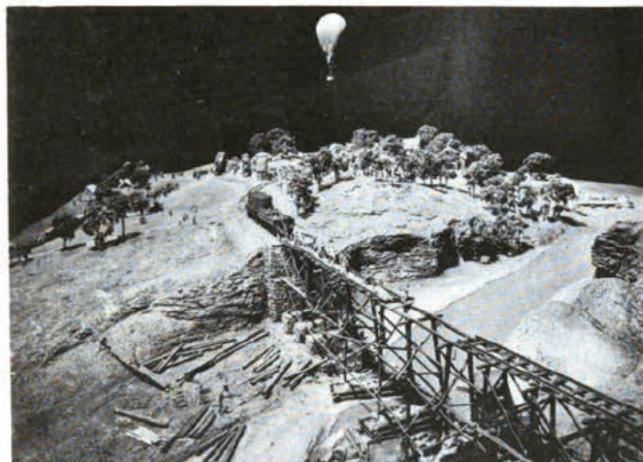
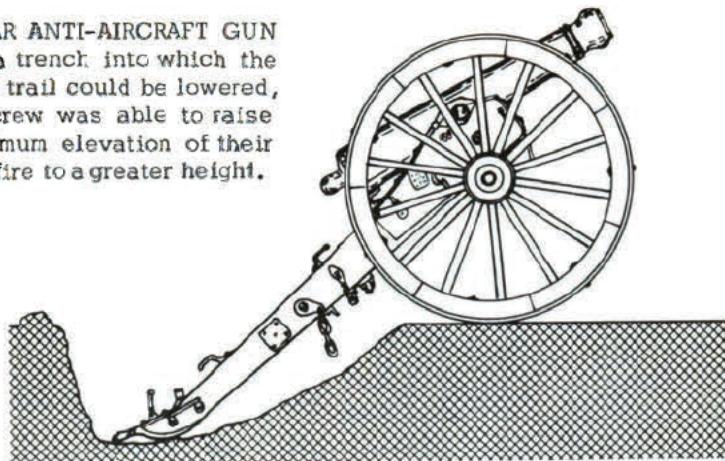


YORK RIVER RAILROAD STATION
Dock & 24th Streets midway between the Upper and Lower plants of the Richmond City Gas Works and with its tracks running to the eastern front, it was the logical loading place

UPPER GAS WORKS
As far as is known, this recently found photo is the only Civil War period one ever made. These works at this time were used only for storage, production being all at the Lower plant



CIVIL WAR ANTI-AIRCRAFT GUN
Digging a trench into which the cannon's trail could be lowered, the gun crew was able to raise the maximum elevation of their piece to fire to a greater height.



A CONFEDERATE
BALLOON
OPERATES FROM
ITS
RAILROAD BASE
A modern diorama
conceives of how
it might have
looked

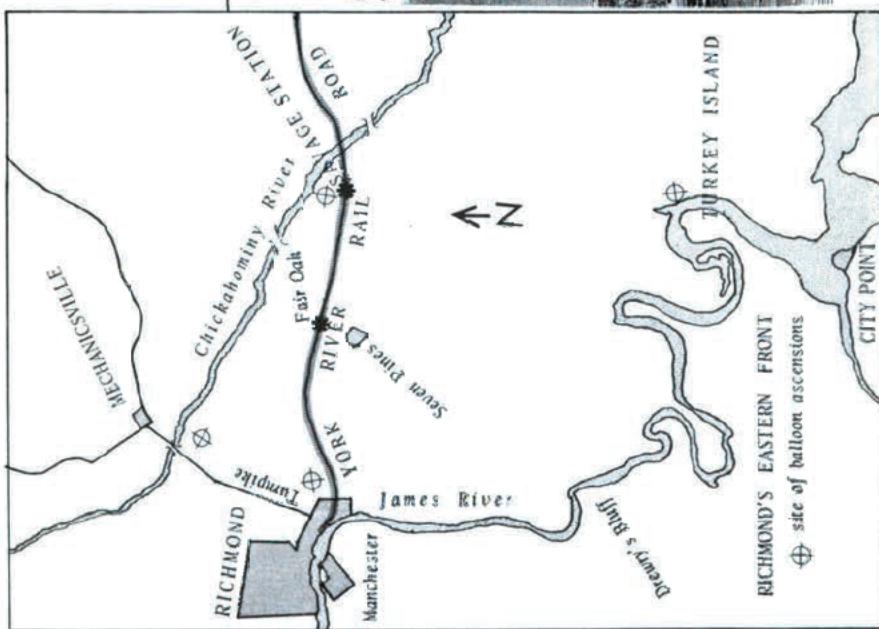
RICHMOND BILL FOR GAS - A receipt like this one must have been issued many times for balloon inflation----7,500 cubic feet, about \$22.50.



486
[AUGUST 2, 1862.]
HARPER'S WEEKLY.

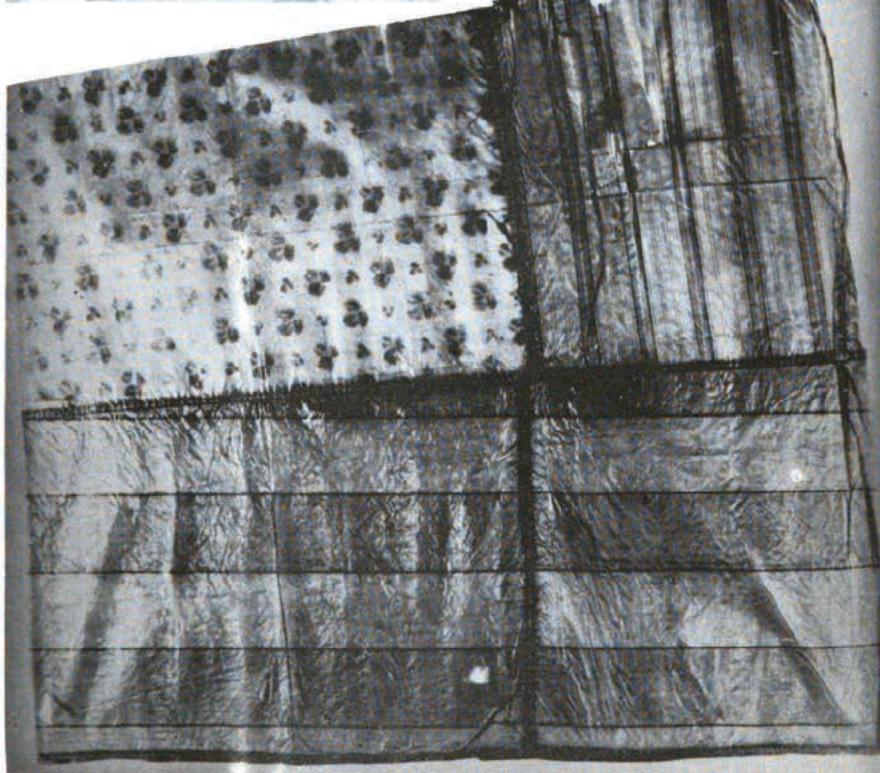
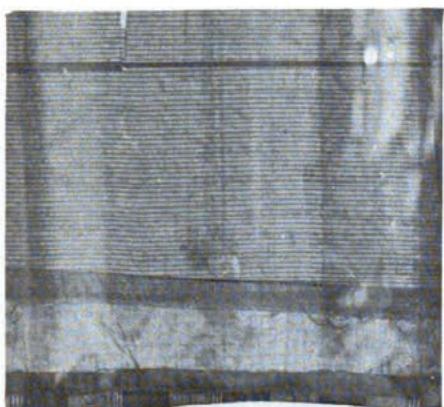


CAPTURE OF THE REBEL GUN-BOAT "TEASER" IN THE JAMES RIVER.—[DRAWN BY A CORRESPONDENT.]



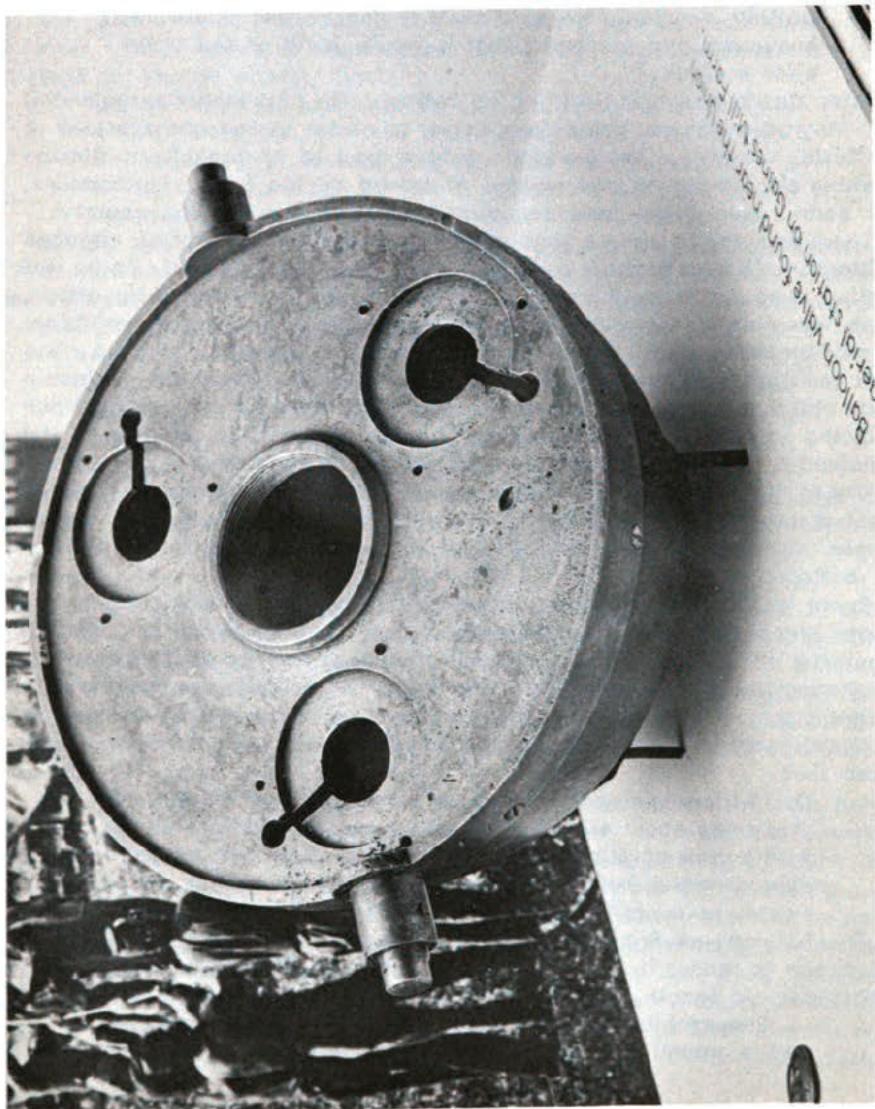
FRAGMENTS OF THE "SILK DRESS" BALLOON

Two sections cut from a Confederate balloon made of silk. (below) The larger portion is in the Smithsonian Institution and the smaller (left) is in the Confederate Museum, Richmond. Although the photographs are of a different scale, it is obvious that the trefoil design is from the same bolt of material. The passage of time and the rubber-naptha varnish has but little dimmed the bright colors.



BALLOON GAS LINE VALVE
This valve, which is in
the museum of the
National Park Service
at the Richmond National
Battlefield Headquarters
on Chimborazo Hill in
Richmond, was found on
property near where Union
aeronaut, Lowe, had a
balloon station close to
Gaines' Mill. It was dis-
covered around 1928 by a
workman employed by the
Richmond Battlefield Parks
Corporation in clearing
the areas now under NPS
jurisdiction

It is apparently part of
the Force Pump which was
located between the Cool-
er and the Purifier. See
the illustration of the Gas
Generators on page 22.



way of Richmond, he had brought with him Major E. P. Alexander, who had been transferred to his command. Also with him was a large observation balloon, for he remembered the success with which one had been employed in the fighting on the Northern Front.

It was nothing but a big cotton bag, coated over so as to make it airtight, and intended to be inflated with hot air, as gas was not a thing to be had in those days and in those places.⁵⁸

This balloon was hoisted by Johnston soon after his arrival and its presence was noted by the Union balloonist, Lowe, who had been attached to McClellan's army. With Lowe was the news reporter, George A. - Townsend, who dispatched:

On the 13th of April the Confederates had sent up a balloon, the first they had employed, at which Lowe was infinitely amused. He said that it had neither shape nor buoyancy, and predicted that it would burst or fall apart after a week.⁵⁹

After this initial test flight of his balloon, General Johnston requested that Magruder furnish him with someone to assist in the observations of McClellan's forces. The assigned soldier was to be capable of distinguishing the character and number of troops on his front. Furthermore, this person was to be well acquainted with the surrounding country.

There was at the time a young captain, John Randolph Bryan, attached to Magruder's headquarters and serving as his aide-de-camp. As he was serving temporarily as a clerk in Magruder's Adjutant-General's office, Bryan was able to intercept the message from Johnston and to volunteer himself for the required mission. Bryan, who was then 21 years old, had been familiar with the area around Yorktown and the southern peninsula since childhood. He felt that he was admirably suited for the task. Upon reporting to Johnston's headquarters, he was thoroughly questioned and examined by the General as to his knowledge of the countryside and his ability to distinguish one branch of the Union service from another. Upon passing these tests satisfactorily, he was assigned to the care of a crew of men who were already well trained in the inflation and operation of the balloon.

Bryan was furnished with a wig-wag flag and was instructed in the proper signals to cause the balloon to move fast or slow, up or down. In addition he was given such information as was then available regarding the disposition of the enemy and was asked to carefully note where each different arm of service (infantry, artillery or cavalry) was located:

Upon reaching the site from which the ascension was to occur, Bryan noted that:

The balloon party were located behind a large thicket of pine trees about a half-mile back of the Confederate lines with a view of allowing the balloon to reach a considerable elevation before it could be seen by the enemy, who would, of course, fire at it in the hope of destroying it.

The balloon, as Bryan reports, was a large cotton bag covered with a substance to render it airtight and was anchored to a long rope, perhaps a half-mile in length, the end of which was tied to a tree and:

...then coiled in a great number of coils, sailor fashion, on the ground, and then passed around a windlass and was

finally attached to a number of cords coming down from the balloon. From this cone of cords hung a good-sized hamper or basket, in which I was to stand or kneel and make my observations.⁵⁷

Before each ascension the balloon was rapidly inflated:

...with hot air, for a plentiful supply of pine knots and turpentine had been made to create a great heat under a flue, the end of which opened into the balloon...

and ascensions, observations and descents had to be made quite rapidly since the heated air cooled quickly, resulting in a loss of lift to the balloon.⁵⁸

Bryan did not have to wait long for his first ascension for on the day following his assignment to the balloon crew, Johnston ordered that an aerial observation be made. It was during this flight that Bryan learned of the "danger zone" through which balloonists had to pass during the ascents and descents of their balloons. At first Bryan signaled for the balloon to ascend slowly, but:

Hardly, however, had I got above the treetops and obtained a view of the enemy's line than I observed a great commotion among them, men running here and there and in a very few minutes they had run out a battery. I saw the officer in charge elevate the gun and give the signal to fire.

Giving the flag signal to cause the balloon to ascend very rapidly, Bryan escaped unscathed from the encounter but learned that upon emerging from the protection of the sheltering trees, the balloon must be raised with all speed until above the range of the enemy guns. Once aloft, from his elevated position, he was able to see the whole countryside:

a wonderful panorama spread out beneath me. Chesapeake Bay, the York and James rivers, Old Point Comfort and Hampton, and the Fleets lying in both the York and James, and the two opposing armies lying facing each other.⁵⁸

Bryan then proceeded to sketch out a rough diagram noting the enemy's position with respect to the streams, rivers and roads which were clearly visible. On this map he marked the locations of the enemy troops using the initial "I" for infantry, "C" for cavalry, "A" for artillery, and "W" for wagon trains. He mentions that he was somewhat hindered in this effort by a slow spinning or rotation of the balloon. This turning of the balloon was the result of the use of but a single line to hold the balloon rather than a number of ropes which would have prevented the rotation. Since the balloon was inflated only with heated air, however, its lifting capacity would have been seriously lessened by the weight of additional lines of the great length required.⁵⁹

Upon the completion of his aerial mapping, Bryan signaled for the balloon to be brought down. Immediately thereafter, he made his second important observation as to the operation of war balloons in the face of the enemy. He realized that he must again pass through the "danger zone" during his descent and that although he had been able to catch the enemy unawares during his ascent, they now stood ready and waiting for him to pass within range of their guns. Furthermore, they now knew exactly where he must pass since his anchor line gave an exact indication of the path of descent. In fact, a number of additional batteries were now aimed at the spot through which he must pass on his way down. Once again,

though, by frantically signaling for a rapid descent, he was able to safely descend through a severe barrage of shot and shrapnel. Upon completion of this, his first aerial adventure, Bryan quickly rode to Johnston's headquarters where the General himself transposed the noted information to the battle map of the area.

Later that evening, the whole balloon force was ordered moved to a new location nearer to Yorktown. As a result of Bryan's suggestions, an arrangement was devised whereby the speed of descent of the balloon could be increased. This was accomplished by hitching a team of six artillery horses to the windlass in such a manner as to allow them to gallop swiftly down an adjacent road thus drawing the balloon to earth with considerable speed and thereby reducing the time of exposure to enemy fire while in the "danger zone".

A day or two after this ascension, a second aerial observation was made, and it, like the first, took place during the daylight hours. The information gained during this second flight was again transferred to General Johnston's maps. A few nights later Bryan and the balloon squad were rudely awakened by a courier who informed them that the Confederate forces were about to fall back from Yorktown to move up the peninsula to defend the city of Williamsburg. General Johnston had received word that McClellan's army was moving toward them with the obvious intent of launching an attack on the following morning. Johnston very anxiously desired information as to which of the approaches to his lines were being used by the enemy. He, therefore, ordered that an immediate ascent be made by the balloon to obtain the data.

The balloon was quickly made ready and inflated in the usual manner. Since the ascension was to be made at night, Bryan felt little concern because the dark background of the sky would conceal from the view of the enemy while the rather bright moonlight would render them visible to him. An unforeseen complication arose which was nearly to result in the capture of the Confederate balloon and its aeronaut.

The Confederate troops, almost to a man, had never seen a balloon, and each time that I went up, they crowded around the balloon squad to watch this novel performance and amused themselves by making many and varied remarks. On this occasion the balloon, shining in the bright firelight, attracted a larger crowd than usual and the crew in charge had great difficulty in keeping them back out of their way so they could properly perform their work.

Bryan was able to push through the crowd to enter the basket and gave the signal to rise. He had ascended to an elevation of about 200 feet when suddenly and without warning the balloon seemed to be jerked upward to a tremendous height. He at once suspected that the rope tether had broken from the balloon. Afterwards he found out what had really occurred.

One of the soldiers who was drawn by curiosity to see the balloon ascend had crowded, with the others, too near, and had unwittingly stepped into a coil of rope, one end of which was attached to the windlass, which before he could step out again tightened around his leg and began pulling him up to the windlass, whereupon he screamed loudly, and one of his friends seized an axe and cut the rope, releasing him, but also releasing me.⁶⁰

After recovering from the initial shock and surprise at such a precipitous ascent and the balloon had reached equilibrium, Bryan became aware of two dangers with which he was faced. The balloon was cooling off rapidly and must sooner or later descend. From the direction in which it had been blown, it could land either in the York river or on shore behind the Federal lines.

The ascension had taken place from a point back of Dam #2 or Wynn's Mill and Bryan soon found himself drifting across the Confederate lines into enemy territory. Much to his relief, the direction of his flight changed. He was blown back into the area where Colonel Ward's Second Florida Regiment was encamped. This chance of fate did not yield the expected results, for:

...they turned out en masse, and believing me to be a Yankee spy, followed me on foot, firing at me as fast as they could... In vain I cried to them that I was a good Confederate...

Fortunately, the wind again freshened and changed direction now moving the balloon and its occupant out over the York river which though but a half-mile wide at Yorktown was now about three or four miles wide at the balloon's location. Since it had cooled down considerably, the balloon descended to within 200 feet of the surface of the York river. Bryan, hearing and feeling the loose end of his tether rope splashing in the river, began to undress preparatory to abandoning the balloon and swimming for land. At the last possible moment, the wind again shifted and carried towards the Williamsburg shore. After a short time, the balloon had crossed the beach, been carried some distance inland, and had settled almost to the ground, fortunately, behind the Confederate lines. At his first opportunity, Bryan slipped over the side of the basket, slid the short distance down the rope to the ground and found himself in an orchard. Running along with the balloon, he was finally able to pass the rope around an apple tree and secure the balloon which soon flopped, deflated, to the ground.

Bryan managed to obtain a horse from a farmer in the neighborhood and he hastily returned to Johnston's headquarters with information regarding the movements of the enemy which he had obtained despite his harrowing experience.

The information which I was able to give General Johnston as to the roads upon which the enemy were now moving enabled him to prepare for an attack which was made by them early the next morning just before day. I was among those who awaited their approach, and you will pardon me if I say that it gave me no little satisfaction to aim my rifle at those who had so recently taken a wing shot at me.⁵⁸

This night flight by Bryan was the last made by the Confederates until the following month when they had fallen back to the outskirts of Richmond. At least three Union balloons were in active use during this time, and the Confederate gunners tried in vain to bring one down. A Confederate gun crew, trying desperately to force a greater range from their piece, was blown up when its cannon exploded in the attempt.⁶¹

The next appearance of a Southern balloon occurred during the bitter fighting of the Seven Days' Battles and this balloon like the ones before

it was destined to have a short but active existence.

CHAPTER VI

"SILK DRESS" BALLOON AT RICHMOND

"They captured... the last silk dress in the Confederacy"

J. LONGSTREET 1862

In his advance up the Peninsula toward Richmond, McClellan was constantly hampered and slowed by heavy rains and the rear guard action staged by Major General James Longstreet. Finally, on the 31st of May, after a particularly heavy rain had flooded the Chickahominy, McClellan found his army split, with two corps on the Richmond side of the river and the remaining three isolated on the northern shore. Johnston seized upon this opportunity to strike and the resulting severe Battle of Fair Oaks (Seven Pines) kept McClellan away from Richmond. Johnston was wounded in this action and was replaced with General R. E. Lee.

Meanwhile, Southern aeronauts were still volunteering their services to the Confederate government. Unfortunately, no chain of command was set up to make use of their talents and many were turned away. One such circumstance was reported in the month of May in a Richmond paper:

Not long since, that distinguished aeronaut, Professor James C. Patton of Petersburg, Virginia, came over to Richmond on the purpose to offer his services to the government. After making several ineffectual attempts to reach General Johnston's headquarters, he gave up and returned home in despair. His services in extinguishing the Yankees by his intelligent observations of their whereabouts and numbers would be of the greatest benefit if were allowed to come in competition with Lowe, the great gas-Professor.

Lowe's balloons had moved, by this time, to within sight of Richmond and Confederate gunners still tried in vain to bag the "great gas-Professor". One evening at about 5:00 p.m., near the Meadowbridge Road, We had a little target practice on one of the balloons opposite Mrs. Christian's farm yesterday. A superior rifle gun had the effect of making the Yankees draw down the balloon in a hurry. They conveyed it with rapidity to a point some distance off where they sent it up again. Kemper's battery also fired at the balloon.⁶²

During this last event, the Federal reporter, Townsend, had again made an ascent with Lowe, this time about five miles east of Richmond, in the Constitution. Lowe was sketching maps of the Confederate entrenchments when the balloon came under the fire from their batteries. The balloon was drawn to earth so rapidly that the correspondent fainted during the descent and had to be revived upon reaching the ground.⁶³

Many Confederate officers were well aware of the advantages of aerial observation and were anxious to make every effort to obtain balloons for this purpose. Luckily, there was, under construction, in the city of Savannah, Georgia, a balloon which would soon replace the one used by

Johnston on the Peninsula.

This balloon, which was to become known and remembered as the "Silk Dress" balloon, was made by Captain Langdon Cheves of the Confederate Army. Cheves, who was forty-eight years old at the time, was a signer of the South Carolina Ordinance of Secession and had been a noted lawyer before removing to his father's delta rice plantation on the Savannah river just across from the city of the same name. Cheves was living in Savannah at the time when Cevor and Dalton made their unfortunate balloon flight just before The War.⁶⁴

Cheves had the "Silk Dress" balloon built at his own expense in the Chatham Armory at Savannah. It was made from new silk imported specifically for the purpose. After being cut into strips or gores, the silk was assembled and was then rendered impervious by being coated with a varnish made of rubber train springs which had been dissolved in naptha.⁶⁵ When inflated, its volume was approximately 7500 cubic feet. The balloon was completed in the middle of June, 1862, and was immediately rushed to Richmond, Virginia. Once there, it was put under the command of Major E. P. Alexander who had become familiar with balloons, first under Beauregard at the Battle of First Manassas and later with Johnston in the Peninsula Campaign. In mentioning the balloon, Alexander, erroneously stating Cheves' first name, said:

...I was placed in charge of a balloon which had been manufactured in Savannah by Dr. Edward Cheves and sent to General Lee for use in reconnoitering the enemy lines. It was made from silk of many patterns varnished with gutta-percha car springs dissolved in naptha, and inflated at the Richmond Gas Works with ordinary city gas.⁶⁶

Perhaps, because it was made from silks of many colors and patterns and was, therefore, so beautifully conspicuous, the balloon became known as the "Silk Dress" balloon. This nickname might have originated with General James Longstreet who wrote in his memoirs:

The Federals had been using balloons in examining our position, and we watched with envious eyes their beautiful observations as they floated high in the air well out of the range of our guns. While we were longing for the balloons that poverty denied us, a genius arose for the occasion and suggested that we send out and gather together all the silk dresses in the Confederacy and make a balloon. It was done, and we soon had a great patchwork ship which was ready for use in the Seven Days' Campaign.⁶⁷

Although Longstreet's story of the origins of the balloon is not correct, the name, "Silk Dress" balloon, has remained with it and numerous writers, refer to it as such.⁶⁸

The "Silk Dress" balloon made its first observation flight on the 27th of June just outside of Richmond. The aeronaut aboard the balloon on this ascension was Major E. P. Alexander, who wrote:

I saw the Battle of Gaines' Mill from it and signaled information of the movement of Slocum's division across the Chickahominy to reinforce Porter.⁶⁹

Unlike the previously used Confederate balloons, this one was filled with gas rather than with hot air. It utilized the manufactured gas from Richmond and when fully inflated could support over 200 pounds. The

city-owned and operated gas works in Richmond were located conveniently near the York River Rail Road Station, and this means was used to convey the balloon to the front lines. This procedure was described by Longstreet:

We had no gas except in Richmond, and it was the custom to inflate the balloon there; tie it securely to an engine and run it down the York River Rail Road to any point at which we desired to send it.⁷⁰

When this balloon made its first flight with Alexander, the Union army was also making use of its balloons with their aeronaut, Lowe, who reported seeing it aloft from one of his balloons at 11:00 a.m. on the 27th of June:

About four miles to the West of here the enemy have a balloon about 300 feet in the air.

And later in a second report:

...the rebel balloon suddenly disappeared about an hour since...⁷¹

Shortly after this time the Battle of Gaines' Mill was in full swing.

The balloon was hoisted aloft on the following day after the fierce fighting at Gaines' Mill and its presence was again reported by the correspondent, Townsend, who said:

....it floated, like a thing of omen, over the spires of Richmond. At that time the Federals were in full retreat, and all the acres were covered with their dead.⁷²

On the next day, Sunday, 29 June 1862, the Confederates again made use of the "Silk Dress" balloon to observe the retreat of Federal troops during and after the Battle of Savage Station. Townsend reports seeing the balloon on this day also. Oddly enough, he mentions that the "Silk Dress" balloon was the first made and used by the Confederates despite the fact that he made the same remark in connection with Bryan's balloon which he had seen two months earlier at the fighting at Yorktown. In mentioning the "Silk Dress" balloon observing the Federal troops falling back across White Oak Swamp and Creek, Townsend said:

The Confederates had discovered that we were falling back, by means of a balloon of home manufacture - the first they had been able to employ during the entire war.⁷³

During these observations, Alexander and the "Silk Dress" balloon were not immune to fire from the Union artillery batteries and on at least one occasion the balloon narrowly escaped destruction at their hands. At that time, Captain George B. Winslow's Battery D of the First New York sank the trails of its guns and, using 30-second fuses, caused the balloon to be rapidly brought down.⁷⁴ Also, at this time, General R.E. Lee took special care to conceal his guns and their movements from the view of enemy balloon observations.⁷⁵

Lee was fighting desperately to prevent McClellan from establishing himself for a concerted attack which might result in the capture of Richmond and consequently, he pressed the attack at every possible opportunity. McClellan's strategy soon became, not the conquest of Richmond, but the salvation of his army as Lincoln ordered him to, "Save your army at all events". He decided to seek the protection of the Union gunboats then patrolling the James river so that he could leave Virginia by the sea, as he had entered. In his hasty movements toward the river, McClellan's

balloon corps were hard-put to keep up with the rapidly moving soldiers. In fact, after one particularly abrupt troop movement, the Union balloon corps was forced to abandon some of its mobile gas-generating equipment. It fell into the hands of the Confederates, the only aerial equipment ever captured by the Southern troops.⁷⁶

The "Silk Dress" balloon made daily ascensions from the time of its initial appearance during the Battle of Gaines' Mill on 27 June until McClellan's army finally reached the James river after Malvern Hill.⁷⁷ In these observation flights, the balloon was repeatedly filled with gas at the city's gas works in Richmond and then transported on the York River Rail Road to a spot convenient to view the Union army. But with McClellan on the James at Harrison's Landing, the closest approach for observations that could be made on the railroad was about seven miles.

Realizing that observation from such a distance was, at best, ineffective, the Confederates switched to a new method for quickly moving their aerial lookout post nearer to the enemy positions.

By a stroke of good fortune it happened that the gas works in Richmond were convenient not only to the terminal of the York River Rail Road, but also to the James river.⁷⁸ Since the Union forces were entrenched at Harrison's Landing on the James, it was decided that the balloon, after being filled with gas, should be transferred to the deck of a ship in the river which could carry it down the James until within sight of the enemy on shore. The ship chosen for this unusual duty was the C. S. S. Teaser.⁷⁹

The Teaser was a wooden, steam-powered tug which was purchased at Richmond by the Confederate government. She originally mounted two 32-pound cannons, one forward and one aft. This armament was subsequently modified to consist, at first, of only one gun forward and then later to a 32-pounder forward and a 12-pound rifled cannon aft.⁸⁰ In all cases, both pieces were mounted, unprotected, on the open decks. After being placed under the command of Lee, the Teaser was assigned to a squadron whose flagship was the Southern ironclad Virginia, more commonly known by its original name, the Merrimack. The duty of this flotilla, commanded by the Virginia, was to deny access to Richmond by any Northern invasion fleet coming up the James river. The squadron consisted of the Virginia, Patrick Henry, Jamestown, Teaser, Raleigh and Beaufort.⁸¹ Since the capture of Fortress Monroe and Newport News by the Federals, the possibility of an invasion up the James river by a fleet of Yankee troopers posed a serious threat to Richmond. Furthermore, it was not until the Virginia had been immobilized after the famous sea-battle in Hampton Roads that McClellan felt free to pursue his plans to march of the Peninsula under the protection of the Union ships which could then traverse the James.

After the Battle of Hampton Roads in March 1862, the Teaser was moved up the river to Richmond from which base it was mainly employed in laying electric submarine mines or "torpedoes" as they were then called. It was during the course of this duty and while under the command of Lt. Hunter Davidson that the Teaser was designated to carry the "Silk Dress" balloon downstream for aerial reconnaissance.⁸² The first use of this "Naval Aviation" by the South occurred on the 1st of July, 1862.⁸³

The identity of the southern aeronaut or aeronauts who participated in the ascensions of the "Silk Dress" balloon from the deck of the Teaser is not known but the fate of the Teaser and the balloon is well documented. After making daily observations of the enemy at his base at

Harrison's Landing, the Teaser, on the 4th of July, 1862, went aground on a bar at Turkey Bend in the James river. While in this predicament, she suddenly found herself faced with the Union ironclad, Monitor, and its escort ship, Maratanza, who were patrolling the river. The Teaser immediately opened fire, but the stranded and immobile Confederate vessel presented too good a target for the Yankees. She was holed and abandoned as her fire was returned. An account of the battle is reported by the Commander of the Maratanza:

U. S. S. Maratanza

James River

July 4, 1862.

Sir:

In obedience to your order I proceeded up the river this afternoon, accompanied by the Monitor, for the purpose of making a reconnaissance and ascertaining the Turkey Bend. Nothing was seen of the enemy until I opened the reach of the river at Haxall's when I discovered an enemy's gunboat, which, as soon as she discovered my approach, opened fire. This I immediately returned and on the third fire a shell passed through and exploded her boiler. The crew at once precipitately abandoned her, and on coming up I took possession, capturing everything on board including public and private papers and effects, even the sidearms of her officers, which I send herewith.

The capture proved to be the armed propeller, Teaser, commanded by Hunter Davidson, late an officer of the U.S. Navy, and mounted one 32-pounder banded and rifled gun of 57 hundredweight, and one rifled 12-pounder, with ample supplies of ammunition.

We also captured a Confederate balloon, a quantity of submarine telegraphic wire, and other appliances for submarine batteries.

We saw from aloft a small squad of cavalry, but nothing to induce the belief that a force of any amount can exist in that vicinity. The troops seen were probably attracted by the firing.

I returned the prize to this anchorage.

I have the honor to be,

Very respectfully,

your obedient servant.

T. H. STEVENS

Lieutenant,

Commanding.⁸¹

With this capture of the "Silk Dress" balloon, the aerial activities of the Confederate army were temporarily disrupted. The threat to Richmond, however, had been successfully eliminated by Lee's combination of land, naval, and air forces. McClellan retired from his effort to take the Confederate Capital. On 14 July 1862, President Lincoln hopefully appointed Major General Henry W. Halleck as General-in-Chief of the Union forces.

Four days later, the AIR ARM OF THE CONFEDERACY was again in operation.

CHAPTER VII

LAST DAYS OF THE CONFEDERATE BALLOON CORPS

"...to do such service with it as may be necessary"

C. CEVOR 1863

After successfully countering McClellan's attack on Richmond, Lee turned his attentions to Pope and his Union army that were moving south from Washington. There followed a series of feints and maneuvers by Lee and Jackson which eventually resulted in the defeat of Pope by the Second Manassas Campaign early in September, 1862. At this period, another Confederate balloon had been built in Savannah, Georgia.

Word of the capture of the "Silk Dress" balloon was not long in reaching Savannah, where it had been built. Less than two weeks after the balloon had been lost on the 4th of July, material had been purchased for the construction of another balloon of similar design. A significant difference between this new balloon and the original silk one was that the new balloon was paid for with funds furnished by the Confederate government. The persistent use of balloons by Beauregard, Johnston, Lee and others had finally convinced the Confederate War Department of the usefulness of balloons in ascertaining the movements and activities of enemy forces.

The man chosen to build the new balloon was Charles Cevor, whose balloon flights at Savannah just before the war had doubtless inspired Captain Langdon Cheves to sponsor the building of the earlier "Silk Dress" balloon. The material for Cevor's balloon was purchased during the same month in which the first silk balloon had fallen into the hands of the Yankees. Very little documentation is available concerning this new balloon, but a fairly clear picture of some of its history can be inferred from the facts that are known. For example, if it is assumed that all of the silk which was purchased went into the actual construction, with allowances for waste and scraps, it can be computed that Cevor's balloon was about the same size, 7500 cubic feet, as the first "Silk Dress" balloon. The balloon was probably completed around the 21st of August, on which date the bill for its materials and labor was presented to the Confederate government. About a month later its appearance was noted in several Southern newspapers. In recalling the fate of the first silk balloon, it has been mentioned that:

...It was soon replaced by another one made similarly of variously colored pieces of silk.⁸³

Thus, it seems logical to conclude that Cevor's balloon was actually a second "Silk Dress" balloon both in appearance and use.

The new balloon remained in use in the Savannah-Charleston area for several months, during which time it received the active support of the Confederate army in the Department of South Carolina and Georgia. Beauregard, who had been put in charge of the forces in the vicinity, authorized the expenditure of funds for its operation on 21 November 1862:

The Confederate States, Engineer's Department, Savannah, Georgia,

W. Atkinson & Labatt. Chas. Corr. Dr.

I Certify that the above account is correct and just.

John McBrady
Capt. Engs in charge

RECEIVED at Savannah on the 21st of August 1862
of Capt. Jno. H. Cready Confederate States Army,
Fees hundred & twenty five dollars and Eighty three cents,
in full of the above account.

Chas. C. Evans 82

(SUGAR IS DISSOLVED.)

Office of Chief Engineer.
Charleston, South Carolina.
November 20th, 1862.

General:

I have the honor to request that Capt. W.H. Echols be authorized to pay out of the Engineer Fund, such necessary debts as may be contracted by Mr. Cevor, to put the Balloon under his charge, with its appliances in working condition, and, such other expenses as may attend its removal and use to any point within this Department.

Capt. Echols informs me that he is without such authority.

I have the honor to be,
Very Respectfully,
Yr. Obdt. Servt.

D. B. Harris
Maj. & Chief Engineers.
Headquarters Department
South Carolina and Georgia

Charleston, South Carolina
November 21, 1862

APPROVED
By Command of:
General Beauregard

THOMAS JORDAN
Chief of Staff ⁸⁴

The techniques employed in inflating the "Silk Dress" balloon were very similar to those used in Richmond. The new balloon, like its predecessor, was filled at the city gas works, in this case in Charleston rather than Richmond.

Cevor evidently made numerous ascensions in the balloon in the seven months following its construction for on 16 February 1863 he requested, and received, permission to establish a "charge account" at the gas works instead of making payment in advance for the necessary gas to inflate the balloon:

Charleston, S. C.
February 16, 1863.

General:

As there is no method of determining accurately the amount of gas I will require for inflating the Balloon under my charge, to do such service with it as may necessary in this department - (the amount of Gas used, depending entirely upon the duration of the ascension) and as occasion may arise for its speedy inflation and use, I deem it essential that all preliminary arrangements should be completed beforehand.

I have the honor therefore to request that authority be

given me to obtain from the Company in this City, such a supply of Gas as may be necessary for the purposes of ascension, whenever the use of the Balloon is required.

At each inflation of the Balloon, the Meter through which the Gas passes from the works into the Balloon, will register the number of feet of Gas used, and an accurate a/c can thus be kept between the Company and the Government.

I have the honor to be

Very Respy yr

CHAS. CEVOR

Capt: ir Ch: Balloon ⁸⁵

While these activities were taking place, the Southern armies were engaged in the invasion of Maryland; later, Pennsylvania. The North was tightening the noose of the naval blockade around the South. One irritating loophole remained open, through which Confederate vessels passed with scheduled regularity. This was the Port of Charleston, South Carolina. Finally, in early April, 1863, the U. S. Navy began an onslaught by sea determined to stop this gap in an otherwise effective blockade. General P. G. T. Beauregard was ordered to bolster the defenses of Charleston, and to maintain, if possible, the South's last access to the world markets.

Stationed there at the time was Captain Langdon Cheves who was directly in charge of the construction of many of the harbor defenses and the fortifications at Morris Island.⁸⁶ Cheves, in addition to being an early advocate of balloon observations, was mentioned as exhibiting considerable "mechanical ability".⁸⁷ It is not at all impossible that this man, who had built the first balloon of silk, was associated with the ballooning activity which took place at Charleston, although no specific information relating him to its operation is presently available. In any case, on the 10th of July, 1863, the Union army and navy, in a determined effort, launched a powerful amphibious attack at the harbor defenses. Captain Cheves was killed instantly by the first shell fired at Morris Island during the naval bombardment. It is ironic that a "Monitor", which captured the Cheves' balloon aboard the Teaser, should be the same type of ship which killed the builder of the balloon with its first shell.⁸⁸

At some time during this period, the Cevor silk balloon was also lost to the Confederacy and the last mention is made of Southern aerial activity. The Cevor balloon was not captured, however, but was carried away by a high wind.⁸⁹

1015 H Street
(Washington, D.C.)

Miss Cunningham:

It affords me pleasure to share with you as a lady of the "Palmetto State" the enclosed piece of a balloon made of the silk dresses & oiled by the ladies of South Carolina (Charleston I think) and presented to the Confederate Army for inspection purposes during the late struggle for independence(sic). It was not captured but during a high wind, came over into the Union lines and was brought to

the U. S. Patent office as a trophy of the War, and there cut up and distributed. It was much torn and useless. I then and there saw the balloon and obtained quite a piece of it. This was I think in 1863 -

With esteem, believe me

Most truly yrs.

MARIA S. THOMSON ⁹⁰

With the loss of this balloon, the use of balloons by the Confederacy, for all practical purposes, ended. There is mention of a balloon sewn up by the hands of the ladies of New Orleans but no details are available.⁹¹

In all probability, none of the previously named aeronauts ascended in the second silk balloon. Alexander, who had been named Chief of Ordnance of Lee's Army of Northern Virginia, had moved to the northern front, with Lee's staff. In fact, by his own account, he never learned of the construction of Cevor's balloon, for after the capture of the first "Silk Dress" balloon, he said:

We could never build another balloon, but my experience with this gave me a high idea of the possible efficiency of balloons in active campaigns.⁹²

Bryan, cited for his bravery at the Siege of Yorktown and later mentioned for gallant and conspicuous service in the Seven Days' Campaign,⁹³ had made his last ascension on the Peninsula and never saw duty with balloons again.

It is of interest to compare the fates of the Union and Confederate balloons. The Union Balloon Corps, headed by the drive and showmanship of Thaddeus S. C. Lowe, succumbed to governmental red-tape and petty bickerings in high places. It certainly was not discontinued through any deficiency in performance, for Lowe, showman though he was, realized that to be effective the balloons must be inflated with gas rather than heated air and that this gas must be readily available in the field. With his efficient portable generators and associated equipment, he could maintain his operation even though far removed from a natural source of supply. The advantages of his aerial observations were well recognized by both Union and Confederate officers. Concerning Lowe's activities, Alexander said:

...especially did we find, too, that the balloons of the enemy forced upon us constant troublesome precautions in efforts to conceal our marches.⁹⁴

Alexander also mentions Lowe's balloons at the Battle of Chancellorsville⁹⁵ and he remarked upon their use at the Battle of Gettysburg:

It is notable both as illustrating the contingencies attending movements over unfamiliar ground, and also the annoyance which may be caused an enemy by the use of balloons to overlook his territory.⁹⁶

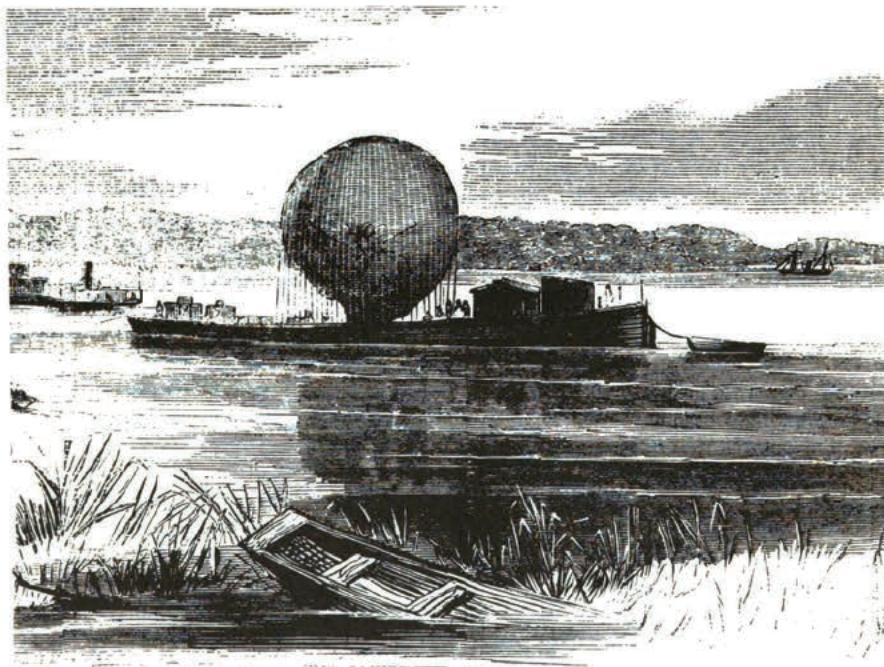
But the fate of the Confederate balloons was decided by the inability of the South to reinflate them with gas in open country. The "Silk Dress" balloon was used daily until its capture, and its success led to the construction of another similar balloon. However, the war had moved away from Richmond when Cevor's balloon was finished and it could only be flown near the ample supply of gas at Richmond. Southern aeronauts were well aware of the methods of producing hydrogen gas, experiments

had been conducted in the field at the College of William and Mary almost 75 years before the outbreak of the Civil War. But, as was too often the case, the South was lacking in sufficient supplies of critical materials. Thus, unable to make extensive use of gas-filled balloons and realizing the shortcomings of the cumbersome, unreliable hot-air balloons, the Confederacy abandoned its balloon operations.¹

One final comment should be made concerning the Confederate balloon activity. A story was written, shortly after the war, about the adventures of several Union soldiers who, having been captured and interned at Richmond were able to escape on the night of 20 April 1865. Richmond, at the time, was under siege by Lt. Gen. U. S. Grant whose forces surrounded the city. A balloon had been inflated by the defenders to observe the enemy. It was in this balloon, stolen at night, that the Union prisoners made good their escape. The story was The Mysterious Island, written by the avid ballooning enthusiast, Jules Verne, who was doubtless inspired by accounts of Confederate balloon activities around Richmond and by the fact that Libby Prison was located only a few blocks from the City of Richmond Gas Works where the balloons were inflated.⁹⁷

The bitterest irony is that even this imaginary Confederate balloon should have ultimately fallen into the hands of the Yankees.

SIC ITUR AD ASTRA



THE LAST RECONNOISSANCE OF THE WAR BALLOON ON THE JAMES RIVER.

In Harper's Weekly of 6 September 1862 this ambiguously titled print is not further explained. The boat does not resemble the Union aircraft carriers, G. W. F. Custis and Fanny; nor the Confederate, Teaser.

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4. This account was taken from a most complete description of J. P. Blanchard's first flight in America. Many of the details of this flight are contained in the book, The First Air Voyage in America, which was compiled and published by the Penn Mutual Life Insurance Company, Philadelphia, 1943.
5. Modebeck, p. 238.
6. Modebeck, p. 227.
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8. F. S. Haydon, Aeronautics in the Union and Confederate Armies (Baltimore-1941), Volume I, page 19, note 86 (hereafter cited as Haydon).

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11. Miller, The World in the Air, page 209.
12. Ibid., page 209.
13. First Air Voyage, p. 9. Also see Modebeck, p. 133, and The World Almanac (NY-1960), page 133.
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23. Ibid., 22 December 1852, page 3, column 1.
24. Ibid., 28 December 1852, page 2, column 6.
25. Ibid., 28 December 1852, page 3, column 1.
26. Ibid., 6 February 1853, page 2, column 6.
27. Ibid., 24 April 1853, page 2, columns 2 & 3.
28. Ibid., 1 December 1857, page 2, column 4.
29. Ibid., 13 December 1857, page 2, column 6.
30. Ibid., 17 December 1857, page 2, column 5.
31. The Daily Picayune, New Orleans, 9 February 1858.
32. Ibid., 16 February 1858, page 2, column 3.
33. Deutsche Zeitung, 3 March 1858, page 2, column 5.
34. Ibid., 23 March 1858, page 2, column 5.
35. Ibid., 30 March, 27 April, 11 May 1858.
36. Ibid., 11 May 1858, page 2, column 6.
37. Ibid., 27 February 1859, page 2, column 5.
38. Gazette, Nashville (Tenn.), 16 July 1858, page 3, column 4.
39. Examiner, Pontotoc (Miss.), 30 November 1859, page 1, column 6.
40. Ibid., 3 August 1859, page 3, column 1; also 3 August 1859, page 2, column 6.
41. B. A. Botkin, A Treasury of American Folklore (NY-1944), p. 419. The version used in the present text differs slightly from the quoted reference. The story as used here was related by the author's mother who heard it told by her father, a Confederate soldier.
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48. Haydon, page 187.
49. Ibid., page 188, note 158.
50. Alfred Roman, Military Operations of General Beauregard in the War Between the States 1861-1865, volume 1, page 153, (NY - 1884).
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58. Southern Historical Society Papers, volume 33, page 32. This is a personal account of Captain Bryan of his balloon activities during The War. It was written in 1905 and is an engaging narrative of the hazards of early ballooning. The reference describes in detail all of the flights which Bryan made.
59. G. A. Townsend, Rustics in Rebellion (Chapel Hill - 1950), page 19.
60. Joseph Bryan III, Sword Over the Mantel (NY - 1960), page 44. This charming book was written by the grand-nephew of the ballooning Bryan. It is interesting that the younger Bryan relates that the soldier who was drawn into the windlass was caught by the arm rather than by the leg. Also he states that the errant balloon landed in the York River and that his uncle swam ashore.
61. Mary Hoehling, Thaddeus Lowe - America's One Man Air Corps (NY - 1958), page 139.

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63. Townsend, Rustics in Rebellion, pages 96 - 99.
64. John Amase May & Joan Reynolds Faunt, South Carolina Secedes (Columbia - 1960), page 128.
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66. E. P. Alexander, Military Memoirs of a Confederate (NY - 1907), page 172.
67. James Longstreet, Our March Against Pope in Battles and Leaders of the Civil War, Yoseleff Edition (NY - 1958), page 512.
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 - Carl Sandburg, Storm Over the Land, page 128
 - Clifford Dowdey, The Land They Fought For, page 183
 - Captains of the Civil War in Chronicles of America, vol. 31, page 63
 - Fairfax D. Downey, The Guns at Gettysburg, page 69
 - Clement Eaton, A History of the Southern Confederacy, pp. 121, 144, 165.
69. Alexander, Military Memoirs of a Confederate, page 172.
70. Longstreet, Battles and Leaders, page 512; also see E. Merton Coulter, A History of the South, volume 7, page 335.
71. O. R. A., series 1, volume 6, page 290.
72. Townsend, Rustics in Rebellion, page 92.
73. Ibid., pages 162-163.
74. Downey, The Guns at Gettysburg, page 69.
75. Jennings Coope Wise, The Long Arm of Lee (Oxford - 1959), page 234.
76. Haydon, page 233.
77. Alexander, Military Memoirs of a Confederate, page 172.
78. Francis Trevelyan Miller, Photographic History of the Civil War (NY - 1909), volume 6, pages 77 - 79.

79. R. W. Daly, How the Merrimac (sic) Won (NY-1957), page 84.
 80. Squires, Aeronautics in the Civil War, page 652.
 81. Official Records of the Union and Confederate Navies in the War of The Rebellion, series 1, volume 7, page 543.

Chapter VII

82. From photographic copy in the Archives of the City of Richmond, Virginia.
 83. Coulter, A History of the South, volume 7, page 335, note 4.
 84. Harris MS letter in the collection of the Savannah (Ga.) Historical Society.
 85. Cevor MS letter in the collection of the Savannah Historical Society.
 86. O. R. A., series 1, volume 14, pages 370, 910, 957.
 87. Ibid.
 88. Ibid.
 89. Haydon, page 218.
 90. Maria Thompson MS letter in the collection of the Savannah Historical Society.
 91. MS letter in the archives of the Confederate Museum, Richmond, Virginia.
 92. Alexander, Military etc., page 172.
 93. O. R. A., series 1, volume 2, part 1, page 409;
 O. R. A., series 1, volume 11, part 2, pages 663, 673, 691.
 94. Alexander, Military etc., page 172.
 95. Ibid., page 325.
 96. Ibid., page 392.
 97. Jules Verne, The Mysterious Island (The Works of Jules Verne, NY-1911, Vol. 5, pages 289-297). Though interesting and entertaining fiction, this account shows a lack of factual knowledge about the Civil War by the author. The City of Richmond had been evacuated; Lee had surrendered on 9 April 1865; and The War was over---all before the events described by Verne were supposed to have occurred.

ILLUSTRATION CREDITS

AERONAUTIC INSTITUTE - New York : Page 20, Montgolfier's Balloon.
 CONFEDERATE MUSEUM - Richmond : Page 28, Silk Balloon Fragment.
 CORNISH (DR. JOSEPH J. III) - State College, Miss. : Page 20, Balloons of Blanchard, Morat and Durant; Page 21, Leppig's Balloon; Page 22, Cheves; Page 23, Danger Zone; Page 26, Anti-aircraft Gun.
 HARPER'S WEEKLY - New York : Page 27, The Teaser; Page 44, Balloon on the James.
 RICHMOND (THE CITY OF) : Page 4, Balloon Corps Memorial; Page 21, Beauregard, Johnston, Quaker Guns; Page 22, Gas Generators, Magruder; Page 25, Longstreet, Richmond Wharves, York River Rail Road Station, Upper Gas Works; Page 29, Balloon Valve; Sketch of Balloon in Flight, page 3.
 ROBERTS (MRS. MADISON HINES) - Atlanta, Ga. : Page 22, Bryan.
 SMITHSONIAN INSTITUTION - Washington : Page 28, Silk Balloon Fragment.
 VALENTINE MUSEUM-Richmond : Page 22, Alexander.
 VIRGINIA CIVIL WAR COMMISSION : Page 26, Balloon Flight Diorama.
 WAITT (ROBERT W Jr.) : Page 23, Peninsula Map; Page 26, Gas Receipt; Page 24, Richmond City Map; Page 27, Eastern Front Map, Northern Front Map.

Confederate States of America,
War Department,
Engineer Bureau,
Richmond, Va., 21 Oct. 1862

Capt. W. H. Echols
C. S. Engrs. - Charleston, S. C.

Captain,

The bearer of this letter, Mr. Charles Cevor, accompanied by his Assistant, Mr. A. E. Morse, is directed to report for duty, with a large silk balloon, to Genl. G. T. Beauregard.

The compensation of Mr. C. Cevor is \$140 per month - that of Mr. A. E. Morse is \$100 per month. By direction of the Secretary of War these gentlemen are paid by the Engr. Dept.

They have received compensation up to the 30th Sept inclusive, since which time I have to request you to continue their monthly salaries.

Very respectfully yours,
J. F. GILMER
Col. of Engrs. & Chf. of Bu.

EDITOR'S NOTE :

The letter above came to light just as this publication was going to press. A photographic copy of it is now in the files of the City of Richmond. It permits students of Confederate air activities to fill in the blank of where Cevor's balloon was between its completion at Savannah in August 1862 and its appearance in Charleston in November. It had rushed to Richmond for some as yet undiscovered reason and was then sent South to the old balloon enthusiast, Beauregard, for use where a gas supply was available.

DR. CORNISH COMMENT :

Cevor's new silk balloon remained in Richmond under his command until the end of October. Whereas all previous Confederate balloons had been operated by Army officers, the Engineer Bureau was in this case authorized to pay Cevor a monthly wage of \$140. His assistant, A. E. Morse, also a civilian, received \$100 per month. By comparison the Union balloonist, Lowe, received \$10 per day for his services. On 21 October, Cevor and Morse left Richmond for Charleston, and the Engineer Bureau of that city was instructed to continue their monthly salaries.